EXPERT ADVICE AND TIPS FOR EVERY AMIGA ENTHUSIAST

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AMIGA SHOPPER

From the makers of AMIGA FORMAT

ISSUE 22 ● FEBRUARY 1993 ● £1.50

YOUR DEFINITIVE AMIGA GUIDE

Which printer?

Make the right choice with our round-up of 20 dot matrix, inkjet and laser printers



INSIDE

• GRAB THOSE IMAGES!
The Colourpic Plus and Vidi-Amiga 12 digitisers are reviewed and rated
Video: page 57

• LANGUAGE OF THE PROS
Learn how to program the professional way – it's easier than you think
C Programming: page 126

• ANNIHILATE ANGST
Fourteen pages devoted to solving all of your Amiga problems
Amiga Answers: page 31

• SOFTWARE FOR FREE
A look at the very latest low-cost and no-cost Amiga software
Public Domain: page 139

PLUS The complete beginners' guide to the Amiga. If you've just bought a new Amiga, then you need to read this. Make a start on page 24!

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AMIGA SHOPPER
AT A GLANCE GUIDE

To help you find what you want quickly and easily, this is a cross-referenced list of all the products and subjects covered in this month's *Amiga Shopper*. The subjects covered in Amiga Answers are detailed on page 32; the many PD programs covered on page 139 are listed there. The page numbers given are for the first page of the article in which the subject is mentioned.

Are there any products or subjects you'd like us to take a look at? Well, just drop a line to:

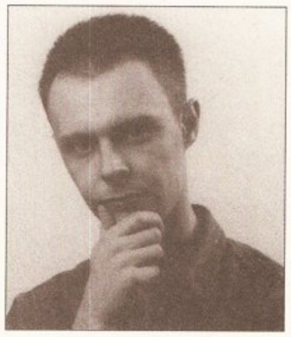
Amiga Shopper,
30, Monmouth Street,
Bath BA1 2BW.

WELCOME

Power is a wonderful thing. Take me – I've finally become the editor of *Amiga Shopper*. At last, it's mine, all mine, I'm the boss, top dog, I have complete control... *(snip – Prod Ed.)* Take the new A1200 for instance – a helluva powerful machine at a superb price. If you've just got one of these – and according to Commodore there are plenty of you out there who have – then your mind must be boggling with the possibilities. That's where we come in: we show just what you can do with your machine, and how to do it.

If you *have* just got your first Amiga, then you should turn to page 24. Our special Beginners' Guide will put you in the picture. You'll be surprised at how versatile the Amiga actually is.

But our main feature this month is a complete guide to buying a printer, starting on page 14. We've put no less than 20 printers through their paces. Different people require different things from their printers, so we've made sure we've covered all the categories – dot matrix, inkjet and laser – and the comprehensive feature chart at the end of the article will ensure that you buy the printer you need to do the job you want, at the price you can afford.



With Commodore's flurry of launching activity at the end of last year, and talk of even more new machines, 1993 looks set to be a good year. Peripherals are already on the cards for the A1200 – expect a flood of developments in the very near future. You can be sure that we'll be keeping you up to date. We're committed to ensuring you get the best out of your Amiga, whether it was built in 1984 or last week.

Enjoy the issue!

Editor

PUBLIC DOMAIN WORLD

YOU SHALL HAVE A FISHY

There are thousands of Amiga programs which are available for little more than the price of a disk. And many more which allow you to try the software free before you buy. Each month in Public Domain World we examine the best of these programs and explain how to get hold of them.

This month we focus on the latest batch of utilities in the Fred Fish collection, and take a look at a program that could improve your computer drawing skills. Public Domain World or

If wishes were fishes...

as we call it this month, starts on page 139

AMIGA ANSWERS

15 PAGES DEVOTED EXCLUSIVELY TO ANSWERING YOUR QUESTIONS

Every month in Amiga Answers our panel, comprised of experts from each of the fields of Amiga computing, answers more genuine reader questions than any other Amiga magazine. And from this month they'll endeavour to correct the errors in any programs you send in as well!

We answer questions every month on Workbench • The CLI • Comms • Programming • DTP • Video • Business software • And more!

THE ANSWERS START ON PAGE 31

FOR A FULL LIST OF CONTENTS, TURN THE PAGE

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This magazine comes from Future Publishing, a company founded just seven years ago, but which now sells more computer magazines than any other publisher in Britain. We offer:

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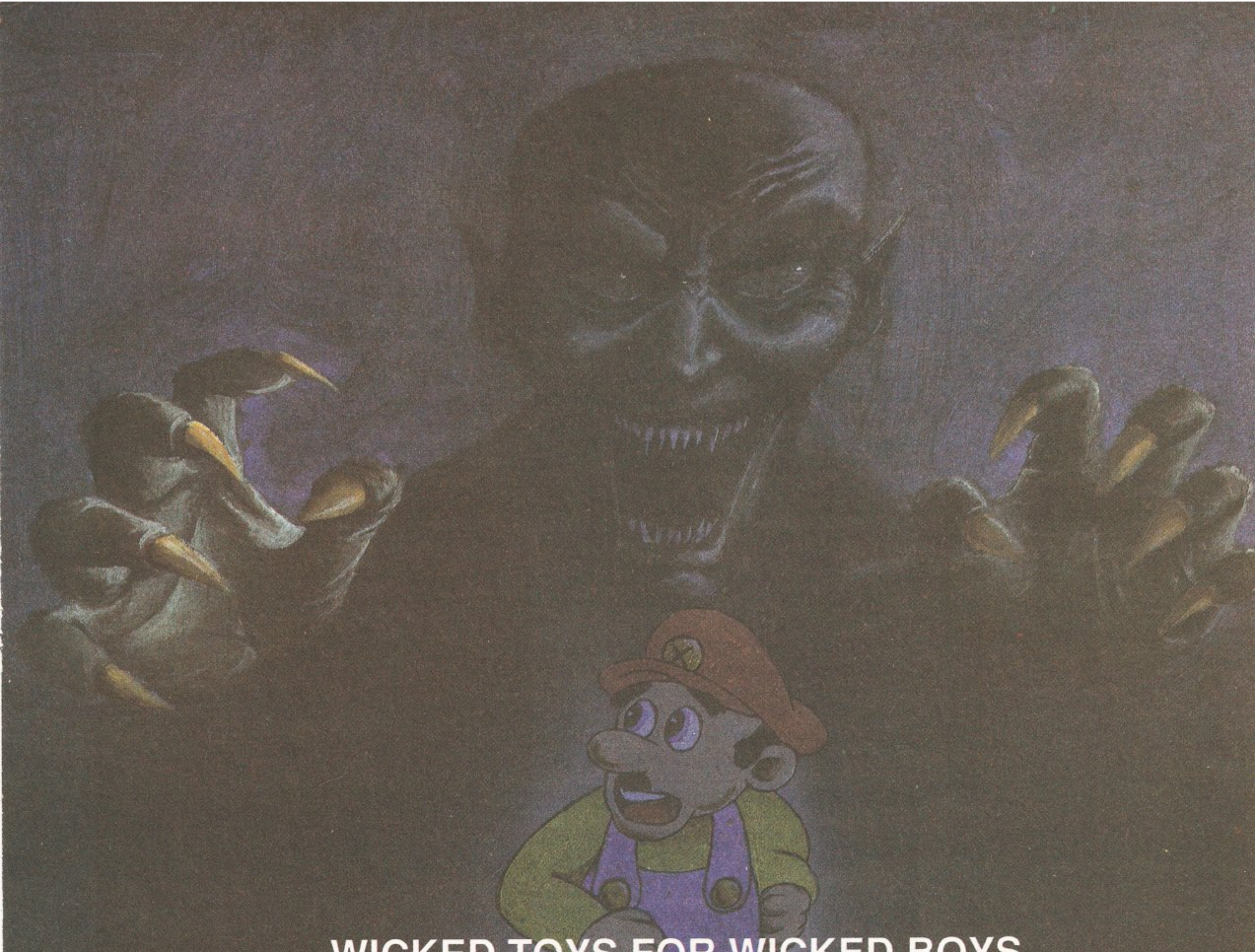
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Access

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AMIGA SHOPPER
Issue 22 February 1993

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Who fancies a year's free subscription this month? We're getting all literary this time. What kind of confectionery was it that created an intense moment of remembrance for the protagonist in Proust's *A La Recherche Du Temps Perdu*? You know? Good, then just jot it down on a card to: 'I read it in the original French, actually', Amiga Shopper, 30, Monmouth St, Bath, BA1 2BW. First correct answer out of the bag wins 12 free issues. We haven't had the right answer to last month's question yet, so keep 'em coming.

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*24pin Colour**
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*optional colour. Price with cable & paper

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240C Colour	£265

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*24pin Colour**
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*optional colour. Price with cable & paper

200 Mono	£195
200C Colour	£219

Citizen's Print Manager
These advanced printer drivers transform colour printout's to laser type quality

Version 1 (224 & 24E)	£5
Version 2 (Swift series 2)	£10

Drivers 1/2 price if bought with a printer

Printer Drivers

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Deskjet 500 Colour	£10

Citizen 120D+
with cable & paper £109

All Citizen printers have 2 year warranty

Citizen Swift 9
with cable & paper
Mono £155
Colour £179

Panasonic KXP1123
Probably the best 24pin mono printer available. With cable & paper
£169

Panasonic/Epson

KXP1170 9pin	134
KXP1124i 24pin	215
KXP2180 9pin Colour	189
KXP2123 24pin Colour	229
Epson LX400 9pin	119
Epson LQ570 24pin	265

Prices include VAT cable & paper

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Squik Mouse
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Midi Interface

4 channel Midi Interface for Amiga	£19
Dr T's Midi Music S/w (A500 only not Plus)	£4.95

Deskjet 500
HP 300dpi Inkjet printer. Laser quality at dot matrix price.
3 year warranty. With cable & paper £325

Deskjet Colour
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3 year warranty. With cable & paper £419

New HP Deskjet 550C
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LC2420 Mono 24pin	185
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Prices include VAT cable & paper

Kickstart Upgrades

Commodore 2.04 full upgrade	79.00
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120Mb A530 Combo	£749
240Mb A530 Combo	£989

for A1500

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240Mb Hard Disk	£629

GVP ram £41 per 1Mb

Ram Upgrades

A500 1Mram +clock	£24.90
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A500+ 1Mram +clock	£39.90
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Accessories

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Floppy Drives
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Commodore
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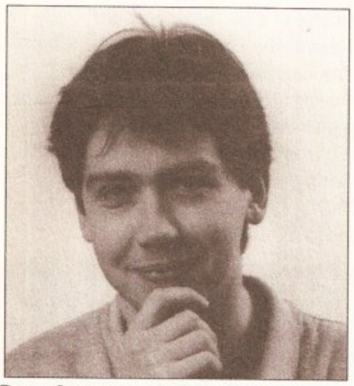
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PERSONNEL CHANGES



Dave Green, a serious-looking soul, takes over as Production Editor of the magazine that's serious about your Amiga

There's been a couple of personnel changes around the *Amiga Shopper* offices this month.

The first is that Alison Harper, our erstwhile Production Editor, has left to work on another magazine. She is being replaced by the lean, mean (but perhaps not as pretty) form of Dave Green. Dave says: "While all our contributors are of course infallible, sometimes bad people sneak into our computers and plant extra characters in our files to make us look silly. It's my job to root out these so-called 'typos', thus making the reading of the magazine a pleasant and painless experience for all of you."

The second is that Dave has left to "rest in a special hospital" ...no, only kidding, the second is that Andy Storer, who has left to edit a brand new magazine, has been replaced as Editor by Cliff Ramshaw.

CHEAP HARD DRIVES

Software Demon is selling what it claims to be the cheapest hard drives around for the A1200.

The prices for the different sizes of IDE drives are as follows: 20Mb for £110, 40Mb for £180, 120Mb for £260 and 240Mb for £450. The reason for the low cost of the drives is that they are the more common 3.5-inch drives. Software Demon has developed its own cabling and fitting procedure to connect these to an A1200. As a consequence, the drives cannot be user-fitted. They may be bought pre-fitted in an A1200, or alternatively you can send your A1200 to the company and, for a fee of £19, Software Demon will fit a drive for you.

All drives have an access time of 14ms or less, and are supplied with software to install Workbench 3. Software Demon ☎ 0736 331039.

WORD PRO FOR KIDS

Helios Software has released *Childsplay*, a word processor aimed at children aged between 2 and 12.

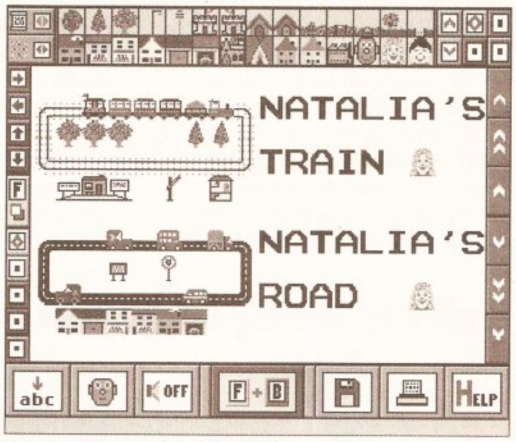
The idea of the program is to make learning as creative and fun as possible. To this end, it is highly graphical in nature. Children can manipulate pre-defined graphic blocks as if they were letters, creating a multi-layered effect with words on top of graphics. The pre-defined graphics may be altered or added to with blocks from any standard IFF picture.

As children type words into this educational program, it will say them out loud in one of three voices: male, female or robot. There is also a facility for the program to speak each letter in a word, or to recite a whole passage of text.

As well as providing the facility for children to type in words, *Childsplay* also comes with a preset list of words, any of which may be selected via the mouse and added to the main text. In this way children are able to improve their vocabulary.

A number of puzzles can also be created by an adult in *Childsplay*. A block-oriented jigsaw is one example; but more sophisticated puzzles such as pattern-matching games can be implemented with the system's two-layer graphics and text approach.

Childsplay costs £24.95 from Helios Software ☎ 0623 554828.



Bright, colourful graphics and computer-generated speech add educational appeal to Helios Software's *Childsplay*

A600, A1200 and A4000 officially described as 'consumer' machines

More new Amigas

The recent World of Commodore Show in Toronto proved the spawning ground for rumours concerning yet another new batch of Amigas.

A Commodore official was apparently heard describing the A600, A1200 and A4000 as 'consumer' Amigas, implying that a number of professional-level models are to be introduced with specifications higher than that of the A4000.

It seems likely that these machines will be the host of the enhanced AGA chip set discussed in last month's news pages. New facilities are said to include a 32-bit blitter, 24-bit true colour display and built-in frame grabbing. It's likely that such machines will have CD-ROM drives fitted as standard.

A Digital Signal Processor ('DSP') is also expected to make an appearance, giving much improved CD-quality sound with real-time special effects. Announcements were also made concerning an add-on DSP for the A4000, as well as a SCSI-II controller and new variations on the A4000. See the US News on page 11 for the full story.

Speculation is still rife concerning a mid-range machine, popularly referred to as the A2200, with specifications similar to the A1200 but with greater expansion possibilities and a separate keyboard. Commodore UK's Kelly Sumner has strenuously denied the existence of a machine called the A2200. Then again, in *Amiga Shopper* Issue 17 he denied all knowledge of a machine called the A800, just before the A1200 (with a very similar spec to that rumoured for the A800) appeared.



The A4000 is a hot machine, everyone agrees, but could Commodore be launching a whole range of machines with even higher specifications?

POWER BOOST FOR A1200

Microbotics has launched a maths co-processor upgrade board for the A1200 computer.

The board, called the MBX1200, includes a 68881 maths co-processor clocked at 14.3MHz, which provides up to a 55-times speed increase on floating-point operations. On average, an A1200 with the board installed will return a result eight times faster than an unexpanded A1200 using the AIBB benchmark. A 68882 co-processor, clocked at 25MHz, may be used instead of the 68881.

The board also has a SIMM socket for up to 8Mb of 32-bit RAM. This additional memory autoconfigures as Fast RAM, considerably increasing the A1200's performance.

The MBX1200 fits the A1200 internally, plugging directly into the 150-pin edge connector. Speed-hungry A1200 owners will also be pleased to hear that the board is fully compatible with AmigaDOS 3.

Fitted with a 14MHz 68881 and no extra memory, the MBX1200 is expected to be in the region of £120, while the version with a 25MHz 68882 should sell for £180. Shop around for the best prices.

The MBX1200 is distributed in the UK by Taurus. It is available from Calculus ☎ 0543 414939 and other dealers, including the First Computer Centre, who can be reached on ☎ 0532 319444.

HARD DRIVES READY FOR NEW AMIGAS

Trilogic has announced the arrival of a range of IDE hard drives suitable for use with the A600 and A1200.

The drives are all 2.5 inches in size, and fit internally. They come ready formatted and with a connecting cable, making them ready to use as soon as they have been fitted.

The drives are available in the following sizes: 20Mb for £119.99, 40Mb for £169.99, 60Mb for £199.99, 80Mb for £249.99 and 120Mb for £349.99. Trilogic can be reached on ☎ 0274 691115.

And don't forget to look out for next month's *Amiga Shopper,* which will be carrying an in-depth article describing exactly how to choose, fit and use just such a drive in your A1200 or A600.

VISUAL COMMUNICATION

Crystal Concepts has announced the availability of a help video for would-be comms users.

Called *How To Operate A Modem*, the video explains how to set up communications software, log on to bulletin boards and download files. Advice is also given on the use of the numerous file archiving programs currently available.

Packaged with the video is a directory of 150 bulletin board numbers, the comms program *NComm 2*, the directory utility *SID* and two archivers: *PKAzip* and *LHArc*. Buyers of the package will also be eligible to a free three-month subscription to a UK bulletin board. The package costs £26.95 plus £2.00 p&p from Crystal Concepts ☎ 0942 523387.

Frailty of sterling brings price increases across complete Amiga range

Commodore price rises

Prices are set to rise across the entire Amiga range, it has been confirmed by Commodore.

The move comes as a result of the falling value of the pound in the international market. An increase of £30 will be added to the stand-alone A600, the two A600 bundles – the *Wild, Weird & Wicked* pack and the *Epic* pack – and the stand-alone A1200. Other products, such as hard drives and CD-ROM drives, will be subject to a price increase, but the amount is not yet finalised.

The move is scheduled for the beginning of January. Commodore is reluctant to make it: "It may yet not happen," said Commodore's Andrew Ball. When asked if the prices would be reduced once the pound regained its strength, he replied: "as soon as we can."

Obviously the move will affect sales, but coming as it does in the traditionally slack post-Christmas period, the upheaval should not be too great.



The recession hits the Amiga, with price increases of £30 on bundles and stand-alone models

HELP FOR VDU OPERATORS

The Health And Safety Executive has released a book explaining the steps necessary to comply with the European Community Directive on display screens.

The Directive comes into force on 1 January 1993. It is designed to ensure the health of people whose employment regularly brings them in contact with computer monitors.

The main points are that employers will be required to assess workstations and reduce any risks found; employers must ensure workstations meet a set of minimum requirements; that screen work must be planned to provide breaks; and to give eyesight tests to employees who request them.

The book, *Display Screen Equipment Work: Guidance On Regulations,* is available for £5 from Her Majesty's Stationery Office.

COLOUR A4 SCANNER IMPROVED



Question: What have a penguin and a GT-6500 colour scanner got in common? Answer: They both appear in an Epson publicity shot

A super-charged version of Epson's A4-sized flatbed colour scanner has been released.

The GT-6500 offers a number of advantages over its predecessor, the GT-6000. Both are full colour (up to 24 bits per pixel) scanners, capable of dealing with images up to A4 in size. The GT-6500, however, has a much improved maximum resolution of 1200 dots per inch in line-art mode. Also, scanning operations themselves are now much faster.

The GT-6500 is available with a SCSI or parallel port interface, although the Amiga driver software currently only supports the parallel port version. This software is actually a loader module for ASDG's acclaimed *Art Department Professional* image processing package, though it will also be available as a stand-alone package.

Two extras are currently available for the GT-6500. The first is a transparency adaptor, which contains a second scan head and enables the device to take scans of slides, transparencies and reflective materials. The second is an automatic document feeder, which is intended primarily for bulk optical character recognition work.

The GT-6500 is distributed in the UK by HB Marketing ☎ 0753 686000 and retails at £938.83.

Epson UK can be contacted on ☎ 0442 61144.

THE SCAPED CRUSADER

MegageM has announced version 3 of its *ScapeMaker* program. The utility will take an IFF format image and convert it to DEM format for 3D rendering with programs like *VistaPro* and *Scenery Animator.*

ScapeMaker 3 is compatible with all versions of Workbench. It will process 258 by 258 and 514 by 514 point DEM files, and will display two DEM buffers in 16 shades of grey. Control is achieved by a push-button interface, keyboard shortcuts, menus, and ARexx or AmigaDOS scripts.

ScapeMaker 3 costs $64.95 plus postage from MegageM ☎ 0101 805 349 1104.

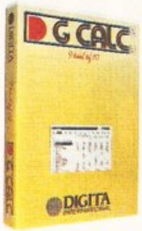
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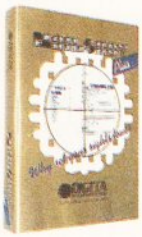




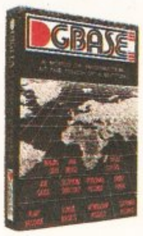
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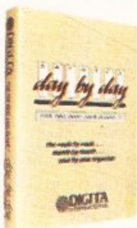
DGCalc
This fast, simple spreadsheet includes many advanced features, including a windowing facility, so that you can look at different parts of the spreadsheet at the same time. **£39.99**



Mailshot Plus
If you ever need to send out mailings or print labels, this program is for you. Animated labels appear on-screen as a continuous sheet, allowing you to scroll backwards and forwards. You can search, sort and detect duplicate labels, print side by side and much more. **£49.99**



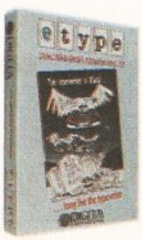
DGBase
If you're looking for fast access to information, and the ability to create customised reports, then this relational database is for you (ST). **£49.99**



Day-By-Day
An excellent way to get organised. You'll be reminded of birthdays, meetings and appointments. It includes month/week/day planners and automatic reminders of overdue events. **£29.99**



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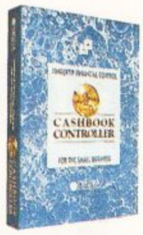


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Transform your computer into a typewriter. Because text is printed instantly, you can line up your form, press return and space a few times to move to the correct place, and then start typing. Ideal for filling in forms and envelopes. **£39.99**

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A suite of programs which perform all the basic functions for a small business. They may be used independently or integrated and include Cashflow Controller, Stock Control and Invoicing and Statements. **£59.99**

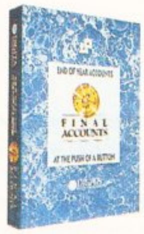


System 3e
Like System 3, but with extended capacity for customer accounts and stock items. **£79.99**

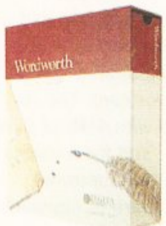


Cashbook Controller
Take the drudgery out of book keeping as this program will replace your cash and petty cash books. In addition to recording cash, bank and VAT transactions, you can enter credit sales and purchases, and for all these entries the program will automatically complete double entry routines, to ensure your records are always in balance. **£59.99**

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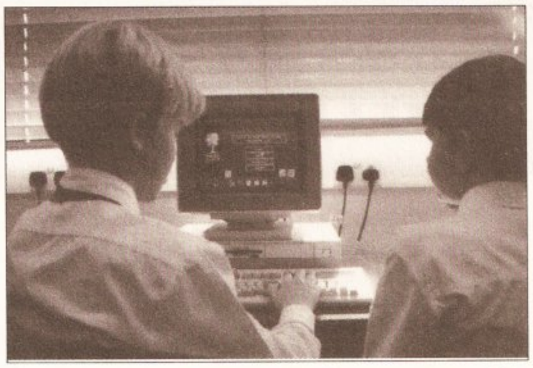
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NEED SOME EDUCATION?



Two enthusiastic youngsters get to grips with the *ADI Junior* range

A new range of software targeted at 4-7 year-olds is due to arrive from Europress Software, a company that prides itself on its educational releases.

The *ADI Junior* range initially consists of two packages: *ADI Junior Reading* and *ADI Junior Counting*, costing £25.99 each. The two packages extend the current ADI range, which deals with Maths, English and French for 11-15 year olds. All programs comply with the requirements of the National Curriculum.

There are 15 puzzles in *ADI Junior Reading*, geared towards teaching the child how to match pictures to words, how to distinguish between true and false statements, and how to recognise symbols and plurals. Three levels of difficulty can be selected for each puzzle.

ADI Junior Counting also features 15 puzzles. Using bright colours and sound, each of these endeavours to teach the topics of addition, subtraction, variances, painting by numbers and the matching of figures to numbers.

Europress can be contacted on ☎ 0625 859333.

GVP to develop for A1200

Major US manufacturer GVP is set to support the A1200 with a number of new peripherals.

Although fluctuations of the pound have prevented any prices from being finalised, development is well under way, with the products slated for release within the next month or so.

First up is a an accelerator card to fit in the A1200's trapdoor expansion slot. It will come with 68030EC processor clocked at 40MHz and space for an additional maths co-processor. Up to 32Mb of 32-bit RAM can be added on-board using 4Mb SIMMs. The board should deliver a performance comparable to that of GVP's A530 combined hard drive and accelerator. The price is expected to be in the region of £399.

Another trapdoor product – meaning that fitting will not void A1200 owners' warranties – is a combined RAM expansion and SCSI hard disk controller card. The card will be populated with 4Mb of 32-bit RAM, and have a slot for a maths co-processor. The SCSI controller should quell the fears of many who felt that Commodore had made a mistake by opting for the slower, less flexible IDE hard disk interface. The price is again expected to be in the region of £399.

Also from GVP is an internally fitting IDE hard drive, which should be available by the time you read this. With a capacity of 85Mb it will fit either an A600 or an A1200. GVP's Faaastprep software will be included in the price of £399.

GVP are on ☎ 0101 215 647 6147. Its products are distributed in the UK by Silica ☎ 081 309 1111.

MORE ART SNIPPETS



Marriages are made in heaven but marriage clip art is made in South Humberside

Artworks has released three new disks of original clip art.

The disks, costing £6.99 each or £18 for all three, are titled as follows: *Prehistoric Life*, *Weddings & Family Occasions*, and *Signs & Symbols 2*. A poster is included with each disk so that the user may see at a glance what images are available.

All the images have been hand drawn, scanned and then cleaned up using painting software to provide high quality results.

Artworks can be contacted on ☎ 0469 588138.

I DIDN'T SEE A MOUSE

A transparent mouse, sure to merge unobtrusively into the surroundings of a cluttered desk, has arrived from Spectravideo.

The Datalux mouse has a variable resolution of 100-200 dots per inch, and costs £22.99. Contact Spectravideo on ☎ 081 902 2211.

Update to C compiler

An update has been released to the *SAS C Compiler*. It will take version 6 of the package up to version 6.1.

The update comes in the form of a freely-distributable archive, available from bulletin boards around the world.

Users need to already have version 6 to make use of the archive, which fixes a number of bugs in the previous version and adds some minor enhancements such as support for public screens.

SAS can be contacted on ☎ 0101 919 677 8000. Its products are sold in the UK by HiSoft, who can be reached on ☎ 0525 718181.

G-FORCE SPEED BOOST

GVP has announced a method by which owners of its G-Force040 accelerator can increase the performance of the board.

All that is required is a simple adjustment of the startup-sequence *(it seems fashionable these days to describe bug fixes as "added features" – Ed)*. The line reading **GvpCpuCtrl >nil FastROM** should be changed to read **GvpCpuCtrl >nil:FastROM MoveSSP**. GVP are on ☎ 0101 215 647 6147.

ANOTHER PD CD ROM

Almathera Systems has released the second disc in its collection of public domain CDs.

CDPD II is compatible with the CDTV and A570 CD-ROM drive. On it are the contents of Fred Fish disks 661-760, the Scope library, JAM disks and AB-20 archives. The addition of an automatic copier brings the disk's size up to nearly 600Mb. Last but not least are copies of both Workbench 1.3 and Workbench 2.04.

CDPD II costs £19.95 from Almathera Systems. Phone them on ☎ 081 683 6418.

MINE OF INFORMATION

Information seekers will be interested to learn of the release of the seventh edition of the *Directory Of Information Sources*.

Aslib's directory lists almost 7000 sources of information. Both organisations which give information freely and those which charge for it are listed.

At £250, the book will mainly interest the dedicated researcher.

Aslib are on ☎ 071 253 4488.

CORRECTION

Contrary to our claims in last month's magazine, Dr T's fun music program *Boom Box* in fact costs just £39.95. It's available from Zone Distribution on ☎ 071 738 5444.



STATESIDE

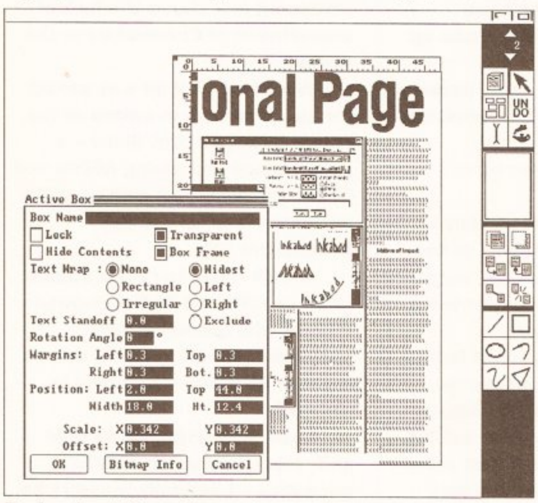
'Amiga Cowboy' Bob Liddil takes a trip to Toronto for the World of Commodore show, and tracks down the hottest news around

Eeeehaw! It's your Amiga Cowboy, temporarily giving up the flatlands of the USA for the windswept and snow-covered urban tundra of Canada. The latest World of Commodore Amiga Show opened to an enthusiastic crowd of Amiga fans clamouring for a look at the latest hardware and software goodies.

OF THE FUTURE

Perhaps the most news was gleaned from overhearing a conversation between Commodore officials. According to my spy (take this as gospel folks, but you know my spy likes his rum and coke), the Zorro III SCSI-II controller and documentation are now complete. It should be available in January, with a transfer rate of 10Mb per second when connected to a SCSI-II drive.

That should quell a few of the criticisms the A4000 has been receiving on this side of the Atlantic. What should also help is the arrival of a Digital Signal Processing chip, which is apparently scheduled for release in late spring, along with corresponding 3.1 device support. It is a 32-bit AT&T chip offering potential for items such as 16-bit CD-quality sound, voice recognition, and high-speed modem support.



Professional Page 3 **may have only just arrived, but it's soon due to be superseded by version 4**

The next three months will also see the release of three further configurations of the A4000. As you know, its processor plugs in on a card, so Commodore producing versions with different processors has always been a likely possibility. Expect to see an EC030-based A4000, as well as one based on the standard 68030. A tower model is also on the cards – the words 'A4000T' and 'February' were mentioned in the same sentence.

My spy also reports overhearing a Commodore official describing the A600, A1200 and A4000 as members of a 'consumer' line-up. He went on to say that a second series of machines would be released to become Commodore's professional Amigas. Quite what these new machines will contain is anybody's guess, but the rumoured enhanced AGA chip set seems like a good guess, and perhaps Motorola's forthcoming 68060 will make an appearance. How'd you like to be a third-party hardware developer trying to cope with all this massive flood of information?

> **"a 32-bit AT&T chip offering potential for... 16-bit CD-quality sound"**

There was lots more to see at Toronto. Gold Disk Inc announced *Professional Page 4.0*. At the top of a long list of new features is support for the Advanced Graphics Architecture chipset. Bitmapped images can be displayed on screen using up to 256 colours, giving users the benefit of true 'What You See Is What You Get' viewing and more exact on-screen proofing.

DTP GRAPHICS BOOSTED

Other outstanding new additions to this popular program include an improved hot-linked graphics editor, enhanced graphic handling with new graphics import filters and improved text handling. These improvements to an already popular and powerful program further promote the versatility of the Amiga to a North America at present largely dominated by Mac and IBM PC page layout systems.

Among the more unusual uses for the Amiga on display at the show was *Sign Engine*, a desktop sign shop based on the Amiga. Parallel Motion Graphics is the name of the company that offers this useful and unique product. *Sign Engine* was designed and engineered for professional sign shop use, so it should find itself right at home in places like vehicle-detailing shops, retail stores' display departments, TV stations, exhibit builders and just about anywhere else that sign making might be required.

SIGN OF THE TIMES

The program operates on any Amiga with 3Mb of RAM, a floppy drive, a hard drive and a vinyl cutting plotter such as those made by American Graphtec, Ioline, Roland, and Houston Instruments.

I saw this one in action and it was positively neat – signs were typeset in *Pagestream* and carved out of sheet vinyl with sharp cutting blades taking the place of pencils on the plotter. In less time than it takes to rope a calf I had the words 'AMIGA COWBOY' to put on my saddle so I'd know which horse was mine in the parking lot. At $559 this vertical application is priced well. Just add Amiga and plotter/cutter and blammo, you're in the sign business. Contact Jeffrey Ginn at Parallel Motion Graphics, 10 Stewart Court, Orangeville, Ontario, L9W 3Z9. Dang clever folks, those Canadians!

> **"the most powerful 3D object utility program available"**

No North American show would be complete without 3D graphics programs and Toronto saw its share. *Pixel 3D Professional* (*PixPro* for short) is said by its producer, Axiom Software, to be "the most powerful 3D object utility program available." *PixPro* can be used to convert bitmap pictures and shapes to 3D objects "with unrivalled quality." This is one of those logo-tweaking programs for the art and video professional that can take the word 'Cowboy' and turn it every which way but loose in a dazzling display of manipulation. I saw a demonstration of the program in action and if I could get my branding iron to do that kind of work, I'd have a seriously cool logo on my cows. How about 'AMIGA' in an upscale font with curves and shadows, and 'COWBOY' in a macho block style, all done up in contrasting shades of pastel turquoise and rawhide? Yes!

For those craving information, the staff of *Amazing Computing Magazine* released this year's *AC'S Guide to the Commodore Amiga*. This invaluable 287-page publication is a useful tool for anyone who needs a comprehensive listing of Amiga goods and services. It features guides to graphic arts, desktop video, word processing, desktop publishing, music, programming, utilities, and entertainment software, as well as a wide variety of hardware, including accelerators, Video Toasters, drives and memory expansion. I thoroughly recommend this for anyone who needs to know what's being offered for his Amiga. It's top notch.

If anything can be said about this year's World of Commodore in Toronto, it's that it was very very cold, but that was just the outside temperature. Inside the international centre, the Amiga was hot, hot, hot. Here's your Amiga Cowboy, making tracks for the border, shouting "Whoopie-ty-yi-yea" and hoping it ain't snowin' in Texas, 'cause me and my Amiga are heading south for the winter! AS

Talking *Shop*

Welcome to the Amiga world's liveliest letters pages! – the place where you get the chance to speak your mind. So join your host, the editor, Cliff Ramshaw for some more no-holds barred bantering. And remember, all you have to do to be included is send your missive to: 'Talking Shop', *Amiga Shopper*, 30, Monmouth St, Bath BA1 2BW. So get to it!...

OFFICIAL COMPLAINT

We recently purchased *Mini Office* as a result of reading your review. So far we have only really investigated the word processor, but we have already found a couple of annoying problems.

The first, though minor, is that the program does not allow for double spacing, which seems to be a fairly standard facility on most other word processors.

The second problem is more annoying! If the capital lock is used it does not just affect the letters. It is impossible to enter any number, comma or even a full stop without releasing the capital lock.

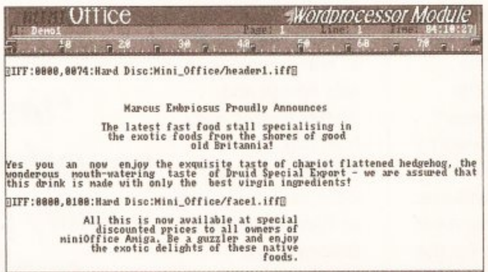
My son wishes to use the word-processor for school projects and frequently uses capital letters so this second problem is the source of great frustration.

When we contacted the supplier we were told that we should have read the reviews. We did read yours but it didn't point out these problems. So it looks as though we shall have to battle on and try not to take out our frustrations on the machine.

Anonymous
Gislingham, Suffolk

Sorry to hear you're not happy with the program. A solution, though not entirely satisfactory, to your first point is simply to press [Return] twice at the end of every line.

We try to make our reviews as complete as possible, but are nevertheless dealing with a limited amount of space. There are no doubt other aspects of *Mini Office* that were not mentioned in the review. Our reviewer chose to mention those points he felt were most salient. Unfortunately, he didn't bother mentioning the two points that are important to you, because he judged them to be irrelevant to the needs of most potential *Mini Office* users.



***Mini Office* found favour with our reviewer, but has at least one unsatisfied customer to its name**

MAIL ORDER HASSLE

I purchased your magazine to look for the best deal for an Amiga 600 with 1Mb and no software.

I found it: £254.95 plus delivery. I placed the order, but my goods have still not arrived. The company's 'hot line' rings unanswered or engaged most of the time. So much for "next day express service".

On the three occasions I have spoken to someone at the company I have been told: "It will be dispatched today and you will get it tomorrow" (eight days ago); "I will get someone to call you back" (still waiting); and "you will have to ring our other number to complain".

I have written and still received no reply or computer. The company was obviously making promises it could not keep.

My message to your readers is "cheapest is not always best". Make sure a company has what you want in stock before ordering

Gary Reid
Redcar, Cleveland

A sad but not entirely unique tale, Gary, and your advice to others is certainly worth heeding. Incidentally, we're starting a new column, *Amiga Advocate*, in which we seek the advice of a solicitor to sort out the hassles some people have had with manufacturers and retailers.

THAT COVER DISK

I have purchased every issue of *Amiga Shopper* to date, and in my opinion it is one of the best Amiga mags for information, and certainly the best value for money. You have just ruined the latter case!

I read with dismay that you intend to supply a cover disk with future issues, which in my opinion is the worst possible thing you could do. If I wanted to buy PD I would choose my own disks; I don't want to be forced to buy PD of someone else's choice. If you want to enter the PD market, why don't you advertise it and let people make up their own minds?

AW Thackray
Dunstable

but on the other hand...

It is good that you have added a cover disk to the magazine, making *Amiga Shopper* even better value for money. I was particularly pleased to see that you maximised the contents of the disk by archiving, and did not waste space by making the disk auto-booting as most other magazines do. However, I do feel that you could have made the process of un-archiving the disk more user-friendly.

The actual content of the first disk was excellent, and I will certainly look forward to future disks if you are able to maintain that sort of standard. Please stick to complete PD or shareware programs, rather than demos of commercial products. A good collection of programs on a single disk saves having to buy several 'normal' PD disks.

Gareth Kitchener
Shefford, Beds

So, opinion is divided on the matter. Interestingly, Mr Thackray's letter arrived before publication of the cover disk issue, whereas Gareth clearly decided to wait and see it before commenting. The point about ease of un-archiving has been noted.

I think the cover disk is a good thing, and if enough readers agree, then we'll continue providing them. The aim, as always, is to produce the best possible magazine.

I'm certain that next month's disk will convince the sceptics among you. Without giving too much away, it's going to be tied very strongly to our editorial content in a way no other magazine has tried, essentially extending the magazine's medium. As well as PD and shareware utilities, there'll be loads of source code listings to save you typing, and a special set of files linked to an article explaining Assembler For Beginners.

THE HORROR

I was horrified to read Kelly Sumner's comments on the Amiga in Issue 17, and, after visiting the Future Entertainment Show, I felt that I must write.

Surely Kelly should not be promoting PCs for use in business instead of the Amiga. Many manufacturers make PCs, so the chance of someone buying a Commodore PC is slim, whereas someone who wants an Amiga has to buy it from Commodore. Kelly's statement just shows the lack of commitment of Commodore to the Amiga.

What topped it off was seeing the two Commodore stands at the Future Entertainment Show – a games stand containing A600s and 1200s (showing just games) and a business stand containing Commodore PCs.

A walk round the other stands (such as GVP and Digita) showed Amigas with genlocks, word processors, 24-bit graphics and so on, with PC owners watching in disbelief.

I was also disgusted to read Kelly joking about the A3000's price drop – I certainly wouldn't be laughing if I had just paid £3000, then watched as the price fell to £1200. Commodore just doesn't care about its customers – this and the price drop of the A600 prove it.

Paul Markham
Stone, Staffordshire

If Commodore wants to succeed in the business market, then it has to manufacture PCs. Most large corporations would never buy Amigas, no matter how powerful or cheap they might be. The PC is an established business standard – it's as simple as that.

Commodore's commitment to the Amiga is very strong – recent events have proved this, particularly in the multimedia arena. As for the A3000 price drop, it's very much a two-edged sword: some people benefit, some don't. I think Kelly justified the price changes adequately, and surely you'll allow him to crack a joke?

THE CHOICE IS YOURS

Following your review of the SupraFaxModems, your readers may like to know that due to expansion and the fact that there are many First Choice retailers scattered throughout the land, The First Choice Computer Centre (Leeds) is now trading as The First Computer Centre (Leeds).

Brian Cobley
The First Computer Centre (Leeds)

Thanks for putting us right, Brian.

SOUND ADVICE

It's time for Commodore to release a 16-bit 16-channel sound chip with frequencies up to 56 KHz. A 40 MHz DSP 56002 (rather than a DSP 56001) and 16-bit internal D/A and 16-bit internal A/D converters would be suitable. All these should easily fit in an A4000 or A1200.

In 1987 the Amiga, with its amazing internal sound capabilities, was taking over the music market from Atari. Now it is over seven years since the Amiga was the best music computer, which is now the Atari Falcon. Where will Commodore go from here?

I hope Commodore will show the real power of the Amiga in the music market again, by including in future machines the sound facilities I have described above.

Helge Kaulheim
Norway

There's certainly no argument about the superiority of the Falcon in the sound department. Talk at the Toronto World Of Commodore show about a DSP chip (made by AT&T, not Motorola) suggests that Commodore intends to redress the balance. It's a shame such a chip couldn't have been fitted as standard on the A1200, but I think Commodore was keen to keep the price down to give it as wide an appeal as possible.

CASH FOR COMPUSERVE

Whilst finding your 'Comms' article both interesting and useful I felt that I had to come to the defence of CompuServe, which you described as "very expensive".

Under the standard pricing plan, you pay only $7.95 per month for unlimited access to a large range of facilities, including electronic mail, fax-sending, airline bookings, mail-order shopping, news and financial information services. The cheapest way to access it is via Mercury to either the London or Reading nodes, avoiding PSS surcharges, and with the option of 9600 baud at a cost of only 4.6 pence per minute cheap rate. There is no communication surcharge in non-prime time (7pm to 6am and weekends). In addition an 0800 number is provided for free assistance. Overall, it compares very favourably with BBSs such as Prestel and CIX which have much higher subscription fees and monthly minimums.

Although it has a very strong American bias, particularly for shopping (though many companies deliver to Europe), it is widening its range of UK-oriented information. A larger UK base would no doubt attract more UK businesses and information providers.

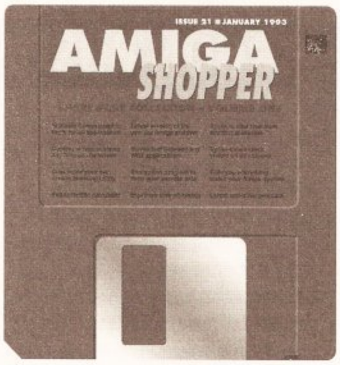
Roger Houghton
Selsley, Gloucestershire

OK, how about if we describe it as "fairly expensive"?

THE WAY AHEAD?

I've owned the same Amiga for over five years now (the same one), a good old 1.2 A500 with which I've been extremely pleased despite a few minor niggles. Now I'm looking to upgrade, but the choice isn't as easy now as it was way back then.

Commodore's new A1200 is, I admit, a very capable machine at an attractive price, but is it a real advance in Amiga technology? Recently the Amiga magazines



The *Amiga Shopper Shareware Collection Volume I* was the cause of some controversy

seem to have been defending the Amiga against the PC-console-Falcon threat by quoting the saying that you buy a machine to run the software that you want. But if that was true the Amiga would never have "beaten" the Atari ST.

When I bought my Amiga it was 200 quid more than the ST and the software was just ported directly from the ST with no advantage taken of the Amiga's better graphics or sound. Not only that but it quite often cost more for the same software which was released a few months after the equivalent ST release. So why did I and so many other people buy the Amiga?

In one word, potential. We read the machine specs and saw a better machine irrespective of software availability. And look what's happened: the ST confined to the museum and the Amiga out on top. So what I am saying is that raw potential (in other words, machine specs) are important. What do you see when you compare the A1200 to the Atari Falcon? A low-density drive, same old sound, IDE hard drive interface, 68020 and no DSP. This is compared to, on the Falcon side, a high-density floppy, 68030, enhanced sound, DSP, network port, SCSI 2/IDE expansion ports, and a slot on the motherboard for a maths co-processor.

As for graphics, it seems the Amiga has better static graphics but the Falcon is better able to manipulate its enhanced graphics modes. Also processor-intensive tasks like ray tracing will inevitably be faster due to the 68030. So graphics superiority is more or less a matter of opinion. From what I have read the DSP is also a very powerful piece of hardware, capable of acting as a sound sampler, graphics digitiser and modem using the right software. While these 'emulations' may not be up to the professional quality add-ons available for the Amiga, how many of us would like to dabble with these features but can't justify the expense of extra equipment?

And in answer to your question of "Who is developing for the Falcon?", there are currently over 100 developers beavering away with... er... developments! So I ask, is the A1200 a worthy successor to the A500/600? Is it the machine to take the Amiga into the next generation? Is it as good as the Falcon? I don't think so. I've been disappointed with Commodore's handling of the Amiga since release. Commodore with its initial advantage could have confined Atari to the PC clone market. But now Atari has a second chance. A few good titles on the Falcon will start the ball rolling as it did with the Amiga a few years ago. Now I wouldn't go so far as to say Atari will win the '32-bit war' – as we all know better specs don't always win out – but they do have a better starter on the blocks.

Adam Thomson
Fyvie, Aberdeenshire

Some interesting and valid points, Adam. The A1200 may not be completely state-of-the-art, but it still represents a significant advance in Amiga technology.

'I CAN LARF ABOUT IT NOW'

Have you learned a valuable lesson from the trials and tortures of experience, or overcome some mind-boggling problem through incredible ingenuity or even sheer luck? Then let us know and win yourself a fiver into the bargain. Just send your post-embarrassed tomes to 'I can larf about it now', Amiga Shopper, 30 Monmouth St, Bath BA1 2BW.

SMASHING TV

Recently I had a problem with my TV's horizontal hold. Playing games on my Amiga was no problem, but, when it came to using *DPaint* I couldn't see the far right column and the bottom three colours on the palette, and had to guess where my colours were.

One day, with screwdriver in hand, I attempted to resolve the niggle once and for all. After turning nearly every board-mounted pot I could find, I switched the TV back on. It didn't work, so I decided to take it round to the TV repair man, who lives just round the corner. While carrying my TV to him, I dropped it. Embarrassed, I picked up the pieces and carried them home again. I bought a relatively cheap portable colour TV as a replacement.

About a month or two later I was fiddling with *DPaint*, trying out all the keys to help me paint faster, when I came upon a combination that could well have saved my old TV – if you press shift and the cursor keys, you can move the icons and palette to a more visible position!

The comparison with the Falcon has certainly caused controversy, but I think we can safely leave the subject alone until some of these new Ataris are actually on sale.

I agree that the Amiga took off because of people admiring its technical excellence, but its real popularity came once there was software running on it that people wanted – mostly games, of course. I think the market has changed: any computer launched now will stand or fall on the software available for it – witness at the success of the PC, despite its inferior architecture. This isn't to say that we shouldn't be interested in tech specs, of course, but that we should perhaps treat them as one more consideration alongside "Will it do what I want it to?" when making buying decisions.

● Could J Doig, P McKeown and H Owens please write to the address at the top of the previous page? We'd like to send you some money, but we've lost your addresses!

Which

Trying to decide between an inkjet, dot matrix or laser printer? Jason Holborn puts twenty top models to the test

Even if you own nothing more than a basic A600, you'd be surprised just how far you can expand your machine. Above and beyond the usual extras such as RAM expansions, extra disk drives and hard drives, the Amiga is capable of handling all manner of different add-ons. These can range from 24-bit display cards, networking systems, polaroid palette interfaces and even robot arms. But after all is said and done, undoubtedly the most useful add-on you could ever buy is the humble printer.

However, choosing a printer can be confusing. Not only do you have to choose which make and model of printer you'd like, but you've also got to decide which type of printer best suits your individual needs. With inkjet and laser printers now dropping in price to such a point that they're now within the reach of the average user, choosing a dot matrix may no longer be the best bet. This, then, is the aim of this feature. We've combed the marketplace in search of the undisputed market leaders – the printers that have proved most popular amongst Amiga users. How well do they perform and how suitable are they for specific applications? All these questions – and more – will now be answered.

PRINTERS SPECIAL

PRINTER TYPES

As mentioned above, popular printers come in three main flavours: dot matrix printers (9- and 24-pin), inkjets (including bubblejets) and, for the ultimate in printing technology, laser printers. All three of these printers have their pros and cons, so don't think that spending thousands of pounds on a laser printer will give you a printer that can handle anything. You should always start by assessing your printing requirements and then choose the type of printer that best suits them.

DOT MATRIX PRINTERS

The most common type of printer is the humble dot matrix. This type of printer continues to outsell the rest by a very large margin indeed. Dot matrix printers work by stamping a pattern (a matrix) of dots onto the paper using a print head (the part of the printer that forms the characters). This contains a vertical strip of fine wires (or 'pins' as they are technically referred to).

The characters are marked onto the paper, not by the impact of the pins with the paper, but by placing an inked ribbon between the pins and the paper. When a pin strikes the paper through the inked ribbon, a very small amount of ink is deposited. Characters are built up by combining these patterns of dots to form recognisable shapes.

However, the shape of these characters is not controlled by the Amiga – all it does is to send the printer a message telling it that a particular letter is required. The printer then forms this character from the matrix pattern stored in its internal memory.

Pros: These days, a fairly capable 9-pin dot matrix with a fair selection of NLQ fonts can be picked up for as little as £100. Dot matrix printers are also very cheap to run, especially when compared to an inkjet. For heavy duty tasks, a dot matrix is the only affordable option.

Cons: The impact between the printer's pins and the paper does produce a fair amount of noise. Older models are particularly bad, but manufacturers have sunk a lot of funds into reducing this problem as much as possible. The result is the development of a new range of 'quiet' dot matrix printers which – while still nowhere near as quiet as a laser or inkjet – are considerably quieter than the ear-bashers that users have endured in the past.

INKJETS

Inkjets have been around for many years now, but they're only just starting to make an impression (if you'll pardon the pun) due to recent price reductions and the need amongst users for much higher quality printouts. Often rivalling laser printers in terms of print quality and quietness, the inkjet works by literally spraying ink onto the page in minute amounts and under very precise control.

Inkjets are very similar to dot matrix printers. However, instead of striking the paper with a set of wire pins, the image is built up on the page by spraying tiny dots of ink onto the page to form characters. The inkjet replaces the wire pins of the dot matrix with a set of tiny nozzles. As the paper is passed in front of the print head, tiny pumps force the ink out of the nozzles at high speed, producing patterns of dots.

A more recent development in the inkjet field is the bubblejet printer. This works in a very similar way, but instead of pumping out the ink, tiny heaters within the nozzles heat it up. The air bubbles produced then displace the ink, forcing it out of the nozzle. Bubblejet printers can use even smaller nozzles than an inkjet, therefore producing even better results.

Pros: Inkjets have dropped in price substantially, so they are now a serious threat to 24-pin and even some more expensive 9-pin dot matrix printers. Because an inkjet is a non-impact printer, it is also very quiet. Quality is also very good indeed (certainly a lot better than a dot matrix) and is very close to a laser when printing text. Inkjets are usually also a lot faster than a dot matrix running in NLQ mode.

Cons: Inkjets are quite expensive to run. The ink cartridges that they use can be used up very quickly indeed when printing full page graphic printouts. Replacement ink cartridges can be quite expensive too – especially if you're using a colour

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Buffer – Because the Amiga is capable of sending information to a printer a lot faster than it can actually print that information, a printer buffer acts as a temporary store for unprinted information. A print buffer allows the Amiga to work at full speed without having to wait for the printer to catch up with it. In general, the larger the print buffer, the better. Most dot matrix printers have a print buffer of approximately 8K in size which is capable of holding over 8000 different characters.

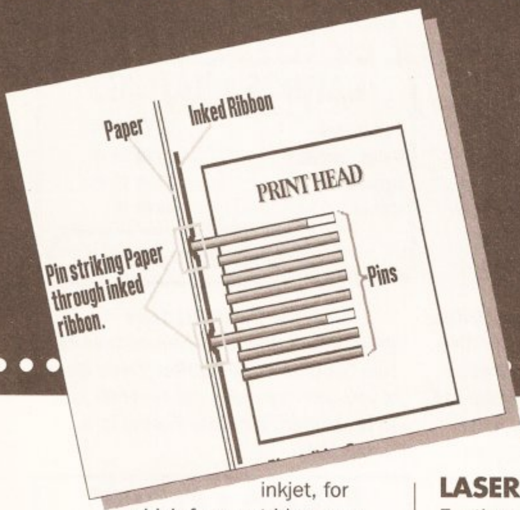
CPS – CPS (Characters Per Second) is a method of indicating the speed of a printer. In general, the larger the CPS rating, the faster the printer. Most printer manufacturers usually quote two CPS ratings – one for NLQ mode and one for Draft mode.

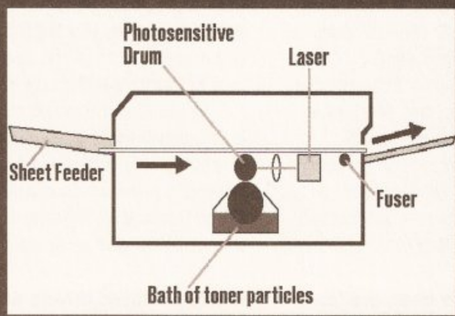
Centronics – Most printers use what is known as a 'centronics' connector to mate the printer together with the computer that is to drive it. The centronics connector is really nothing more than a glorified parallel port, but you should be aware that a special centronics printer lead is required to connect a centronics printer to the Amiga's parallel port. These are commonly available for about a tenner.

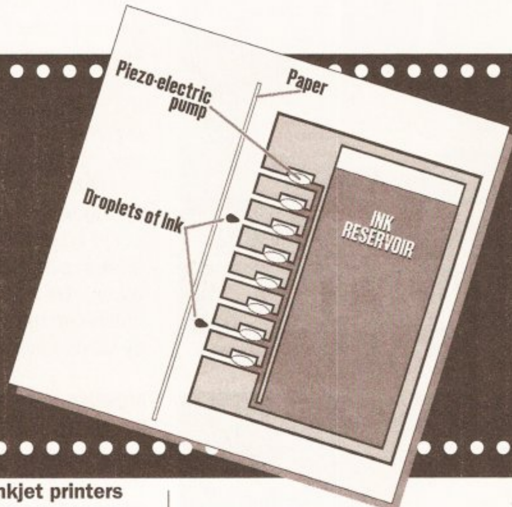
DPI – DPI (Dots Per Inch) is a measurement of the resolution (sharpness) of a printer. DPI ratings don't really make a lot of difference to text printing, but they are very important for printing from desktop publishing programs because a printer with a high DPI rating will produce cleaner and sharper results.

Draft – Draft is a special high speed printing mode available on dot matrix and inkjet printers. It works by sacrificing print quality in favour of raw printing speed. Although draft printouts are no

printer?







Dot matrix printers (left), laser printers (above) and inkjet printers (right) use very different methods to transfer the ink to the paper

inkjet, for which four cartridges are required (red, green, blue and black). Fresh inkjet printouts must also be handled carefully because the ink often takes several seconds to dry.

LASERS

For the ultimate in print quality, you need a laser printer. Designed specifically for DTP applications, the laser produces printed documents which are second to none.

Contrary to popular belief, lasers don't work by burning the image onto the page. Instead, the image is transferred to the page using charged ink particles. Before the image can be printed, the entire page is transferred to the printer's memory as a massive graphics image. When the entire page has been transferred, a laser beam then fires at a photosensitive drum, producing a tiny charge where each dot is to appear. The drum is then passed through a bath of black toner particles.

The charged areas on the drum attract the toner particles, which in turn are transferred from the drum to the page. The page then passes through a fuser which heats it to fix the particles to the paper.

Pros: Lasers aren't cheap compared to a dot matrix, but they are good value if you need the print quality. Black areas that can look rather washed out and 'banded' on inkjets and dot matrix printers, are smooth and purer than driven snow (well, black snow anyway). Apart from an integral cooling fan, lasers are also very quiet.

Cons: Possibly the most annoying aspect of any laser is the fact that they can only print whole A4 pages (even if you only want one line of text). With the price of paper nowadays, you can soon run up quite a bill if you use the printer a great deal. Toner cartridges are also very expensive – expect to pay around £75 for a new one! Thankfully they do last quite a long time, providing that you don't continuously print massive areas of black.

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good for letters, they're more than adequate for things like program listings and plain text.

Emulation – Because most printers are designed to work on many different makes of computer, printer manufacturers build in what are known as 'printer emulations'. To make the task of controlling printers simpler, printer emulations allow many different makes and models of printer to be controlled using the same protocol (or printer 'language'). If a printer uses a common emulation, then finding a printer driver to drive that printer from your computer is considerably easier.

Fonts – A font defines the shape and appearance of printed text. All printers come with at least one font built in. When you print a character on a printer, the computer needs only tell the printer what the character is. It then prints the character using the font in its built-in memory.

Friction feeder – This pulls paper through a printer using two rubber rollers that grip the paper and force it past the print head. Friction feeders allow you to use any type of paper in a printer.

NLQ – NLQ (Near Letter Quality) is a special mode available on dot matrix and inkjet printers. It's slower than draft printing, but produces much higher quality printouts. Recently, LQ (Letter Quality) printers have appeared that offer even better quality.

Printer driver – A special piece of software that allows the Amiga to communicate with a printer. It acts as an interpreter that converts the Amiga's commands into commands that the printer will understand.

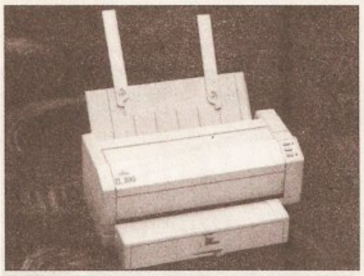
Serial – Another method of connecting a printer to the Amiga is via the serial port – this is not recommended simply because of the amount of work required to get the two devices talking. If you have the choice, always choose a centronics printer instead.

Sheet feeder – A sheet feeder enables a printer to load single sheets of paper automatically, without having to rely on the user to load each one manually. Sheet feeders are usually about £80, but they're worth every penny if you have to print out the same document many times.

Tractor feeder – An inferior paper feeding system, this device handles the task of feeding the paper past the printer's print head. Tractor feeders require special paper that has evenly-spaced holes on either side. These are used to pull the paper through the printer.

INKJETS

The newest arrivals on the printer scene offer high quality, low noise printing at a price you'll like. We find out if inkjets are more than just little squirts



FUJITSU B-100

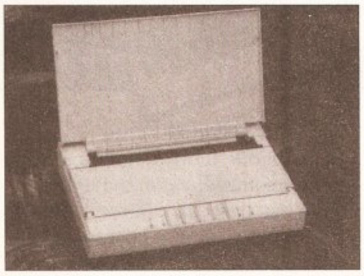
£349 Fujitsu Ltd ☎ 081-573 4444

Fujitsu has launched two new inkjet printers – the B-100 (reviewed here) and the upmarket B-200. Considering the sterling job Fujitsu has done in the dot matrix market, you'd be right to expect great things of the company's new range of 'Breeze' inkjets.

The B-100 is a dinky little printer that looks very basic, but produces some very impressive printouts. Boasting 300 dpi resolution driven by the printer's built-in HP DeskJet emulation mode (which is supported by Workbench), the B-100 offers three NLQ typefaces – Courier, Times Nordic and Letter Gothic – in a number of different sizes and styles. Print quality is very good indeed, especially from a desktop publishing program. With its 8K print buffer, the B-100 is capable of churning out text at speeds of 160 cps in Draft and 80 cps in NLQ mode.

One unique feature of the B-100 is its setup method. Instead of pitching for a complex control panel, Fujitsu's printer has a massive array of switches that have to be set to select fonts and character sets and such like. Although it sounds daunting, these switches are surprisingly easy to use. In all, Fujitsu does it again – the B-100 is a smashing little inkjet that deserves to

RATINGS • RATINGS	
Features	●●●●○
Print Quality	●●●●○
Speed	●●●●○
Value	●●●○○
Overall	●●●●○



CANON BJ-10EX

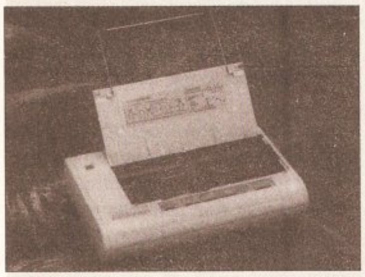
£299 Canon ☎ 081 773 3173

Although inkjets have been available for years now, it was Canon's development of bubblejet printing technology that finally brought the inkjet to the masses. Following on from the successful BJ-130 and BJ-10 bubblejets, Canon's latest (and greatest) budget bubblejet offering is the BJ-10ex, which is basically a BJ-10 with Epson printer emulation.

Thanks to Canon's bubblejet technology, the BJ-10ex is capable of printing graphics at a maximum print resolution of 360 dpi. Canon has wisely produced drivers to allow Amiga applications to take advantage of this impressive resolution, so installation is no problem. Print speed is good too – 83 cps in NLQ mode although the BJ-10ex doesn't offer a high speed draft mode (this is definitely one area where the Fujitsu scores over the Canon). Print buffer size is very good though – a massive 20K print buffer is fitted as standard. The range of fonts is quite good too (four NLQ fonts), but the full range of fonts is not available in either of the two emulation modes.

In all, the Canon BJ-10ex is a great little printer, but the competition has become a little stiffer these days. If you can cope with the minimal loss in resolution, then the Fujitsu is a better bet.

RATINGS • RATINGS	
Features	●●●●○
Print Quality	●●●●●
Speed	●●●●○
Value	●●●●●
Overall	●●●●●



KODAK DICONIX 701

£399 Kodak ☎ 0442 61122

Kodak isn't exactly renowned for having made a big impact on the Amiga printers market, but the new Diconix 701 inkjet is well worth considering. Positioned in the same markets as Fujitsu's B-100 and Canon's BJ-10ex, the Diconix is an budget inkjet aimed at desktop publishers and indeed anyone who needs the quality of an inkjet without the price.

The Diconix is a rather plain-looking machine that folds down into a very compact unit that is actually smaller than Canon's space-saving BJ-10ex, which itself will fit quite happily into a sturdy briefcase.

But despite its small size, the Diconix is actually capable of great things. For starters, its print speed is pretty impressive for such a small printer – boasting 200 cps in draft mode and 120 cps in NLQ mode, the Diconix is the printer equivalent of a turbo-charged hot hatchback. The range of fonts is rather disappointing though – with just one draft and two NLQ fonts to choose from, you'll probably feel rather held back. The printer can be driven using either an HP DeskJet or IBM ProPrinter printer driver. The lack of Epson support is surprising, but no great loss.

RATINGS • RATINGS	
Features	●●●○○
Print Quality	●●●○○
Speed	●●●●○
Value	●●●○○
Overall	●●●○○

FUJITSU B-200



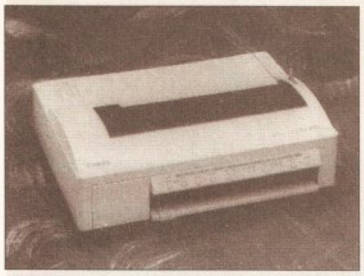
£499 Fujitsu ☎ 081 573 4444

The big brother of the B-100 is Fujitsu's B-200, a bubblejet printer aimed fairly and squarely at the ProJets and BJ-300s of this world. Boasting a much faster print speed and more comprehensive controls than its little brother, the B-200 is an inkjet with attitude.

With its top-loading sheet feeder and front-mounted sheet collector, the B-200 is very similar in appearance to both the ProJet and the BJ-300. Its control panel is nicely laid out, but somewhat confusing – you'll definitely need to read the manual to get this baby working! Print speeds are pretty impressive – 180 cps in draft mode and a very impressive 120 cps in NLQ mode. The B-200 offers just three NLQ fonts – Courier, Letter Gothic and Times Nordic – although these are well handled. Extra fonts can easily be added using font cards.

Although text printing is quite rapid, there's a noticeable delay between the time it takes the B-200 to load a sheet of paper and the time when printing commences. This delay can go on for as long as ten seconds, reducing the overall speed of the B-200 considerably.

RATINGS • RATINGS	
Features	●●●●○
Print Quality	●●●●○
Speed	●●●○○
Value	●●●○○
Overall	●●●○○



CANON BJ-300

£495 Canon ☎ 081 773 3173

Canon's BJ-300 may not look that spectacular, but lurking under the bonnet is a bubblejet printing engine that can churn out text at a phenomenal rate. Boasting print speeds of 150 cps in NLQ mode and a whopping great 300 cps in draft mode, the Canon BJ-300 is a wolf in sheep's clothing.

Available in both A3 and A4 versions, the BJ-300 is designed for heavy-duty tasks. Its styling is a cut above the rest too. With a very simple front panel and the convenience of a built-in cut sheet feeder, the BJ-300 is a comfortable and really quite enjoyable printer to work with. It boasts three built-in NLQ fonts and a further 12 fonts can be added via optional font cards, giving a total of 15 readily-available fonts. Emulation options are extensive too with no fewer than three popular modes on offer – IBM ProPrinter, Canon BJ-10ex and EpsonLQ.

The BJ-300 may be slightly slower than Citizen's ProJet in draft mode, but it still manages to accelerate past the competition when printing in letter quality mode. Combine this with the printer's higher resolution, and the BJ-300 proves itself to be a very capable printer indeed.

RATINGS • RATINGS

Features	●●●●○
Print Quality	●●●●●
Speed	●●●●○
Value	●●●○○
Overall	●●●●○



CITIZEN PROJET

£496 Citizen ☎ 0753 584111

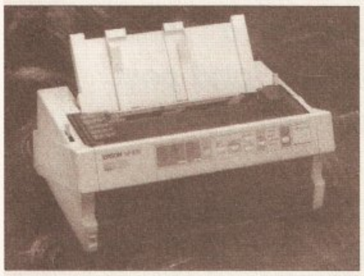
Citizen's weapon in the war of the high performance inkjets is the ProJet, a very capable inkjet that runs rings around most of the competition in terms of printing speed. Featuring the same styling as the Fujitsu B-200, the ProJet even uses the same ink cartridges as its rival – it's not unknown for printer manufacturers to license print engines from others.

The ProJet comes as standard with just one emulation mode – HP DeskJet – although extra emulations are available on optional cartridges. From a specification point of view, the ProJet's greatest selling point is undoubtedly its speed. As Citizen is very keen to point out, the ProJet is clearly one of the fastest inkjets on the market, especially when printing in its 360 cps high speed draft mode. Text printing does slow down a bit in NLQ mode – at just 120cps, the ProJet is actually slower than the BJ-300 when printing letters.

The range of fonts on offer is pretty standard too – the ProJet offers three NLQ fonts. Once again, extra fonts can be added via plug-in cartridges. In all, the Citizen ProJet is a very capable inkjet that produces some very professional, almost laser-quality results.

RATINGS • RATINGS

Features	●●●●○
Print Quality	●●●●○
Speed	●●●●●
Value	●●●●○
Overall	●●●●○



EPSON SQ-870

£659 Epson ☎ 0442 61144

Unlike the rest of the competition, the SQ-870 is the only inkjet on test that doesn't use a disposable print head built into the ink cartridge. The SQ-870 uses a pump that sucks the ink from a sealed container that slots into the printer's front panel. This helps the printer to hold a much larger supply of ink than the competition, therefore increasing the life of each cartridge.

The most noticeable thing about the SQ-870 is its extensive range of typefaces. Whereas the competition are content to include little more than three or four fonts, Epson has really gone to town. The SQ-870 comes with no fewer than eight typefaces, all of which are very usable. It chunters along at a fair old rate too – how does 550 cps in draft mode and 200 cps in NLQ mode grab you? No other printer even comes close! Someone should inform the people at Citizen – who seem to think that their ProJet is the fastest on the market. Not any more!

In operation, the SQ-870 performs as expected. One nice feature is the way the print head automatically cleans itself every few lines to prevent smudging. Quality is exceptional, speed is out of this world and to top it all, the SQ-870 happens to look pretty good too. In all, the SQ-870 is the ultimate inkjet.

RATINGS • RATINGS

Features	●●●●●
Print Quality	●●●●●
Speed	●●●●●
Value	●●○○○
Overall	●●●●○

DOT MATRIX

9-pin or 24-pin, draft or NLQ – for all-round flexibility, you can't beat a good old dot matrix. Read on to discover which makes the best impression



STAR LC24-100

£239 Star UK ☎ 0494 471111

Star is certainly putting a lot of marketing muscle behind its latest printer, the LC24-100. It's not surprising either – in return for your £239 (or so) you get an attractive-looking 24-pin with the kind of specification that you'd normally expect to pay over £300 for. The LC24-100 uses Star's new 'Electronic DIP Switches' (EDS) so it's also very easy to set up, with none of that fiddly biro-wielding needed by normal DIPs.

Specification-wise, the LC24-100 is certainly a giant-killer. It comes complete with one Draft font and five NLQ fonts including Roman, Sanserif, Courier, Prestige and Script. These fonts are selected from a very easy-to-use font panel which, while it may not be the most high-tech feature that has ever appeared on a printer, gets the job done elegantly.

The LC24-100 is provided with a quite substantial 16K print buffer and is capable of printing at a maximum speed of 240 cps in condensed draft mode. However, in normal operation this slows down to a (still very respectable) 160 cps in draft and 53 cps in NLQ mode at 10 characters per inch. Emulations on offer are EpsonQ and NEC 24 modes. In all, the LC24-100 is a great little printer at a great price.

RATINGS • RATINGS

Features	●●●●●
Print Quality	●●●●○
Speed	●●●●○
Value	●●●●●
Overall	●●●●●



STAR LC-100

£219 Star UK ☎ 0494 471111

The 9-pin version of the LC24-100 is the LC-100, Star's latest printer aimed at Amiga users who have shallow pockets but big expectations. Possibly the LC-100's greatest asset is therefore its ability to print in full colour as standard.

Star supplies two ribbons with the printer – one in colour and one in black (for text-only or other black-and-white printing). Swapping between them can be a pain, but it's highly recommended to save on colour ribbon life.

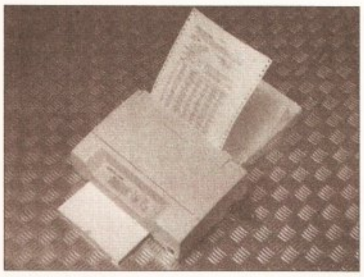
Like its big brother (reviewed on the facing page), the LC-100 has a pretty impressive specification to match its price. With a maximum resolution of 240 by 216 dpi, the LC-100 offers printing speeds of 150 cps in Draft Mode and a pretty respectable (for a 9-pin) 37.5 cps in NLQ mode with a choice of one Draft font and four NLQ typefaces.

However, on the 'down' side, it has to be said that two of those NLQ typefaces are simply slightly different versions of the same typeface.

Considering the limitations of 9-pin printers, the print quality of the LC-100 is surprisingly good. Printing from *DPaint*, colour printouts are full of colour although slight colour bleeding can be seen.

RATINGS • RATINGS

Features	●●●●●
Print Quality	●●●●○
Speed	●●●●●
Value	●●●●●
Overall	●●●●●



EPSON LX-100

£189 Epson ☎ 0442 61144

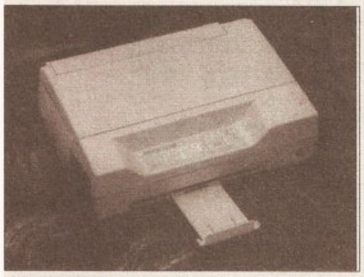
I have to admit that, before this review, I was not a great fan of Epson dot matrix printers, but the LX-100 came as bit of a shock. Epson has never really excelled in the design department, preferring instead to churn out the same box-like printers, but the LX-100 is far removed from those early Epsons.

The design of the LX-100 is perhaps its most striking feature – put simply, the LX-100 doesn't even look like a printer. As a matter of fact, it doesn't look like anything I've ever seen before! This really is a printer for those of you that like your printers simple – even the LX-100's front panel has no more than two buttons on it. The LX-100 is a 9-pin printer (the 'LX' bit in its name tells you this). Offering print speeds of 200 cps in Draft and 40 cps in NLQ mode. With one Draft font and two NLQ fonts, the LX-100 runs fast but is rather lacking in fonts.

One feature of the LX-100 which is worth noticing is its built-in sheet feeder, which Epson supplies as standard. Although it can only handle a maximum of 50 sheets, this sort of feature really does score highly in my book. If you can live without the fonts, the LX-100 is one of the most complete printers available.

RATINGS • RATINGS

Features	●●●○○
Print Quality	●●●○○
Speed	●●●●○
Value	●●●○○
Overall	●●●○○



EPSON LQ-100

£245 Epson ☎ 0442 61144

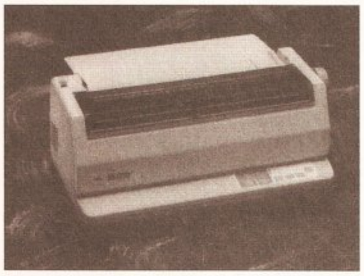
Epson's 24-pin offering is the LQ-100, the big brother of the LX-100 reviewed above. Once again, Epson has gone for the minimalist styling that looks like the sort of thing that Apple might come up with. When I first saw the LQ-100 I wasn't that impressed, but its styling certainly grows on you. Like the LX-100, the LQ-100 comes complete with that very handy built-in sheet feeder, which I absolutely love.

One of the main criticisms levelled at the LX-100 was its lack of decent fonts, but this certainly can't be said of the LQ-100. It comes complete with a fairly decent selection of five fonts – Roman, Sanserif, Courier, Prestige and Script. Roman and Sanserif are scalable fonts, so you can enlarge them to a maximum of 32 point without loss of quality. Print speed is pretty good too – 167 cps in Draft and a very respectable 60 cps in NLQ. Add this to the LQ-100's 11K print buffer, and you've got a printer that will perform well in most situations.

Although it's not the best 24-pin in the world, I have to admit that I quite like the LQ-100. That built-in cut sheet feeder certainly helps, but the fast speed and quite extensive range of fonts also make the LQ-100 a very nice printer indeed. It looks rather weird, but then at least it's not ugly.

RATINGS • RATINGS

Features	●●●●●
Print Quality	●●●●●
Speed	●●●●○
Value	●●●○○
Overall	●●●●○



FUJITSU DL-1150

£395 Fujitsu ☎ 081 573 4444

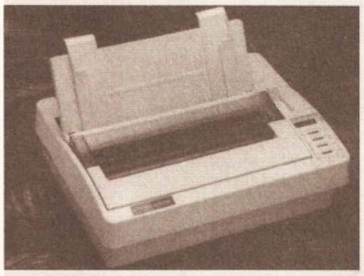
Having already had the opportunity to play with Fujitsu's DL-1100, I have to admit that I expected great things from the DL-1150, Fujitsu's latest 24-pin venture. And, I'm pleased to say, the DL-1150 didn't disappoint.

Fujitsu can't be accused of producing boring printers. The DL-1150 is a strange-looking beast, but its design makes it very pleasant and easy to use. Its control panel is well laid out and easily accessible. Paper loading is easy too, thanks to good design and high quality manufacture.

Specification-wise, the DL-1150 leave most of the competition standing. Not only does it offer the widest range of different typefaces of all the dot matrix printers on test, but its print speed is pretty impressive too. Offering a maximum print speed of 200 cps in high speed draft mode, the DL-1150 can also churn out 60 cps NLQ mode with a choice of three draft and seven NLQ fonts. But possibly its greatest asset is that the Dl-1150 comes as standard with colour printing capabilities. Colour printing isn't wasted either – printing from *ProPage*, the Dl-1150 produces some very acceptable results. In all, the DL-1150 is one hell of a good printer. Highly recommended.

RATINGS • RATINGS

Features	●●●●●
Print Quality	●●●●●
Speed	●●●●●
Value	●●●○○
Overall	●●●●●



CITIZEN SWIFT 240C

£359 Citizen ☎ 0753 584111

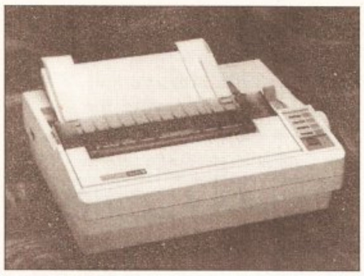
I've never been a huge fan of Citizen printers, but the Swift 240C has changed all that. Having already used a 240C for a couple of weeks when the printer was first released, having the opportunity to use one again is like meeting an old friend. With its impressive specification, blindingly-obvious ease of use and brilliant output, the Swift 240C still holds the 24-pin printer crown.

It's no wonder that the 240C has been doing so well in the market. Not only does it come as standard with full colour, but printing graphics on the 240C consistently produces the best colour printouts you're ever likely to get from a dot matrix. Colours are vibrant, clean and full of detail, even on images with lots of different shades. Text printing isn't bad either – with nine NLQ fonts and two scalable NLQ fonts, you'll never find yourself cursing the 240C because it doesn't have enough fonts. Its scalable fonts can be enlarged up to 40 points.

The 240C certainly doesn't hang around either – boasting a maximum print speed of 200 cps in Draft mode and a Fujitsu-beating 66 cps in NLQ mode, the 240C is no slouch. Nothing even comes close to the 240C. It may be expensive, but you get what you pay for.

RATINGS • RATINGS

Features	●●●●●
Print Quality	●●●●●
Speed	●●●●●
Value	●●●●○
Overall	●●●●●



CITIZEN SWIFT 9

£239 Citizen ☎ 0753 584111

Citizen's main contender in the 9-pin printer market is the Swift 9, which has been available for a fair old time now, but continues to sell well. Available in both standard and wide carriage versions, the Swift 9 range is still very popular amongst Amiga users. It's not surprising either – although the Swift 9 is technically nothing to write home about, print quality is very good indeed.

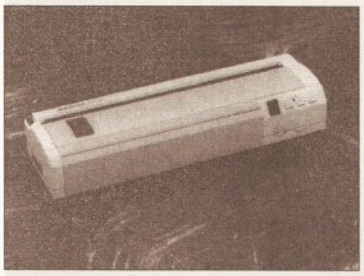
The Swift 9's design is starting to show its age a bit these days. With LCD displays now virtually the *de facto* standard for printer operation, the Swift's rather crude LED-based front panel lets it down a tad. That said, no-one could possibly argue that the Swift is anything but easy to use.

The range of fonts on offer is nothing to get excited about either – with just one Draft and three NLQ fonts, the Swift 9 is hardly going to win any awards. Printing speed is quite impressive though – with a maximum print speed of 213 cps in high speed draft mode and 40 cps in NLQ mode, the Swift 9 certainly lives up to its name.

All things considered, the Swift 9 may be showing its age, but it's certainly not going to lie down and die for a few years yet.

RATINGS • RATINGS

Features	●●●●○
Print Quality	●●●○○
Speed	●●●○○
Value	●●●●○
Overall	●●●○○



CITIZEN PN-48

£325 Citizen ☎ 0753 584111

For computer users on the move, Citizen has the answer to your portable printing needs in the shape of the PN-48 Notebook printer. Despite the fact that the PN-48 is small enough to fit into a briefcase, it packs a pretty mean punch in the specification stakes. Offering 24-pin resolution and a very reasonable print speed, the PN-48 is actually worth considering for home use too.

Print quality is exceptionally good thanks to the use of a film ribbon, rather than the fabric ones used by other printers. Although film ribbons don't last anywhere near as long as a fabric ribbon (Citizen quotes 25 pages!), they give the best quality results by far. The PN-48 can be used 'on the move' thanks to a built-in rechargable battery pack that is capable of churning out 30 pages of NLQ text before it needs recharging. For home use, Citizen also include an external power supply.

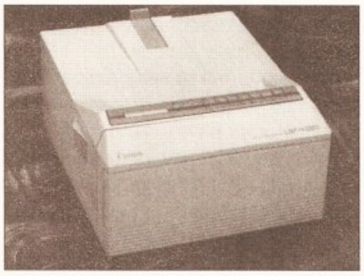
Regarding its specifications, the PN-48 is impressive considering its small size. It doesn't actually have a draft printing mode, but its two NLQ fonts print at a very acceptable 53 cps. The PN-48 is a great printer, with all the advantages of portability, even if it is expensive to run.

RATINGS • RATINGS

Features	●●●○○
Print Quality	●●●●●
Speed	●●●○○
Value	●●●○○
Overall	●●●○○

LASERS

They're almost completely silent, print at very high quality, and are getting cheaper all the time. A brand new laser is sure to amaze yer!



CANON LBP-4PLUS

£1175 Canon ☎ 081 773 3173

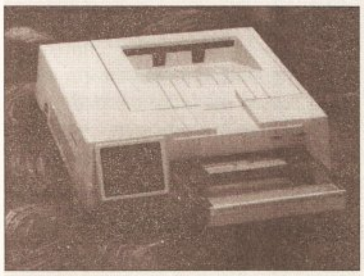
The LBP-4 Plus is a printer that looks good and performs well. Although rather functional in appearance, the LBP-4 is a very attractive-looking creature. To coin a phrase, less is more and that's certainly true of the LBP-4. The front panel is uncluttered and very easy to use, allowing you to get the most from the printer without even having to resort to the manual.

The LBP-4 offers a range of emulation modes including EpsonQ, IBM ProPrinter, Diablo and Canon's own CaPSL, a page description language similar to HP's LaserJet language. Canon supplies an Amiga Workbench printer driver, so getting up and running is very simple indeed. The printer comes with two bitmapped typefaces (Elite and Courier) and 4 scalable typefaces. Although the LBP-4 offers a standard resolution of 300 dpi, Canon's AIR (Automatic Image Refinement) technology helps to increase print quality above that of a normal laser.

In all, the LBP-4 is a very well-designed laser that, while not particularly astounding in the specification department, deserves an overall high score simply on account of its ease of use and attractively-designed casing.

RATINGS • RATINGS

Features	●●●●○
Print Quality	●●●●●
Speed	●●●●○
Value	●●●○○
Overall	●●●●○



OKI OL-400

£449 Oki ☎ 0800 525 585

Oki's OL-400 is an LED printer that includes an impressive specification with an even more impressive price tag. LED printers work slightly differently from conventional laser printers, but the results are exactly the same. However, because the OL-400 doesn't have a great big bulky toner cartridge and laser electronics, it's half the height of all the other lasers on test.

Emulation is well catered for with IBM ProPrinter, Diablo 630 and HP LaserJet 2 modes on offer. The range of typefaces available is a little limited, but those that are on offer are very usable. These include Swiss (Helvetica), Dutch (Times), LinePrinter (a condensed non-proportional font) and of course Courier. Print quality is generally very good, although some early printouts did show signs of print purity problems (large areas of the same colour would be lighter in places) which were probably caused by an unequal covering of toner on the printer's drum.

In all though, the OL-400 is an exceptionally-priced printer that, whilst not being the best laser on the market, certainly delivers the best value for money. If you need a laser but your budget is tight, then go for the OL-400.

RATINGS • RATINGS

Features	●●●●●
Print Quality	●●●●●
Speed	●●●●○
Value	●●●●●
Overall	●●●●●



RICOH LP1200

£820 Silica ☎ 081 309 1111

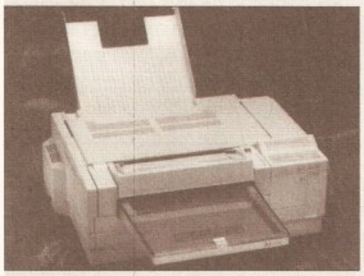
Ricoh's LP1200 laser printer has been causing quite a stir in the Amiga marketplace over the last few months. This is hardly surprising when you consider that the LP1200 comes with 2Mb of RAM as standard, has a maximum printing resolution of 400 dpi (that's 100 dpi more than your average laser) and includes an extensive set of typefaces.

Although standard printer drivers cannot handle the LP1200's 400 dpi print resolution, Silica does supply a printer driver that is man enough for the job. Printing from *ProPage*, the LP1200 consistently produces results that are noticeably better than the other lasers on test. Typefaces on offer include the usual Courier, Prestige and Line Printer, plus Gothic, CGTimes and Universe. The only real downer of the LP1200 is the fact that it cannot be upgraded to PostScript, although Silica claims that a software-based upgrade may be made available at a later date.

Another advantage of the LP1200 is its Flash ROM facility which allows the laser's operating system to be easily upgraded, therefore ensuring that the LP1200 stays current. With all these features on offer, the LP1200 is without doubt the best laser available to Amiga users.

RATINGS • RATINGS

Features	●●●●●
Print Quality	●●●●●
Speed	●●●●●
Value	●●●●●
Overall	●●●●●



EPSON EPL-4000

£799 Epson ☎ 0442 61144

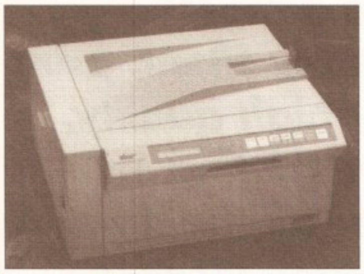
Think printers and most people think Epson. It's a well known fact that Epson is generally regarded as 'the' printer manufacturer. The reasons for this reputation really have nothing to do with Epson's products, but more their acceptance within British schools. Epson doesn't just produce dot matrix printers though, as the EPL-4000 proves.

The basic EPL-4000 comes with 512K of RAM, although to be perfectly honest, the first thing you should do is to spend the extra £164 on a 2Mb RAM expansion. Although 512K is fine for text printing, you'll need the extra RAM for full page graphic printouts. Regarding emulations, there's the usual HP LaserJet, EpsonX, IBM ProPrinter and optional PostScript.

The EPL-4000 operates at the same rapid 6 ppm as the LP1200, but the range of typefaces on offer is a little limited. Although the manual claims that the EPL-4000 has 14 fonts, these are simply based around two typefaces in a variety of different styles. Print quality is excellent with very good print purity and the EPL-4000 is very easy to use, thanks to a well-designed front panel. In all, the EPL-4000 is a great printer, but it really needs to be cheaper.

RATINGS • RATINGS

Features	●●●●○
Print Quality	●●●●●
Speed	●●●●●
Value	●●●●○
Overall	●●●●○



STAR LASERPRINTER 4

£1173 Star UK ☎ 0494 471111

Regular readers of *Amiga Shopper* will probably remember the LaserPrinter 4 very well indeed – we reviewed it a couple of months back. Although it performs very well, it is rather expensive – especially when compared to Ricoh's equally well-endowed laser, the LP1200 (reviewed above).

Like the Epson EPL-4000, the Star LaserPrinter 4 is available with PostScript emulation for an extra £500. This adds no fewer than 35 extra fonts to the EPL-4000's existing four typefaces, plus faster printing via the PostScript page description language. PostScript needs lots of RAM though, so you'll need to upgrade the basic 1Mb LaserPrinter 4 to at least 2Mb using Star's own RAM card. If, on the other hand, you don't need PostScript, the LaserPrinter 4 can be driven using either HP LaserJet or HPGL/2 emulations.

The LaserPrinter 4's performance is generally very good, although it is rather slow at just 4 ppm. The range of typefaces is very good indeed and the 1Mb of memory as standard makes the Star laser a more attractive proposition. If you think you'll need PostScript at a later date, then this is the laser to buy. For the rest of you, go for the LP1200.

RATINGS • RATINGS

Features	●●●○○
Print Quality	●●●●●
Speed	●●●●○
Value	●●●○○
Overall	●●●●○

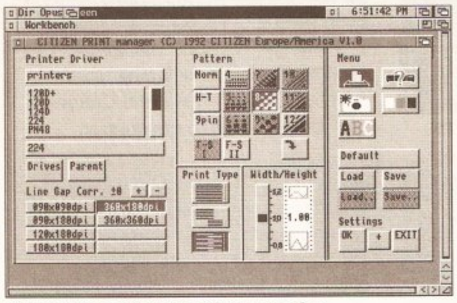
PERFECT PRINTS

Jason Holborn explains how choosing the right printer software and driver can enhance your printouts considerably

Getting the Amiga to communicate with a printer can be most frustrating. You see, the Amiga doesn't actually know how to communicate with a printer. The clever bit of the Amiga's operating system that converts the generic printer codes that the Amiga produces is called a 'printer driver'. The printer driver acts as a sort of language interpreter and mediator between the Amiga and your printer.

The printer driver is a clever bit of software. When the Amiga attempts to send a message to a printer, the printer driver steps in, grabs the message, analyses it and then converts it into a form that the printer can understand. It's a bit like those strange people that you see on TV when two world leaders meet – it's the interpreter's job to make sure that both parties understand what the other is going on about.

Commodore very kindly supplies a range of printer drivers with every Amiga sold. Depending upon the version of Workbench that you're using, you'll find a range of printer drivers designed to handle a large number of different printers somewhere on your system disks (refer to your Workbench manual to find out their exact location). While these drivers will handle most common printer emulations, it's inevitable that there are some printers available that aren't supported. What's more, the Workbench printer drivers aren't exactly renowned for being particularly good at their job.



If you buy a Citizen printer, make sure you get the *Print Manager* too!

In an attempt to keep Amiga users happy, several printer manufacturers have specially developed printer drivers designed specifically for their range of printers. The first to realise the need for printer drivers was Citizen (manufacturer of the 240C, Swift 9x, and ProJet), who released *Print Manager*, a cut down version of IrseeSoft's *TurboPrint Professional*. Although Commodore's own EpsonX and EpsonQ drivers will handle many Citizen printers, the *Print Manager* drivers are faster, more flexible and generally produce much better results. Citizen is selling this program to Amiga users for just £15.

CANON'S ABLAZIN'

Following Citizen's lead, several other printer manufacturers have jumped on the bandwagon. First up was Canon, who launched a whole range of printer drivers for their BJ-10ex, BJ-20, BJ-

PRINTER FEATURES CHART

Note: Prices shown are 'recommended retail' or 'list' prices, which do not include VAT. However, it is very common for dealers to offer substantial discounts on this price, often of up to £100 or more. Shop around!

DOT MATRIX PRINTERS

Model	Supplier	Price	Pins	DPI	Colour	Buffer	Typefaces	Speed (NLQ)	Speed (Draft)	Sheet Feeder
DL-1150	Fujitsu	£395	24	360	Yes	24K	3 Draft, 7 NLQ	60	200	Optional
Swift 240C	Citizen	£359	24	360	Yes	8K	1 Draft, 11 NLQ	66	200	Optional
Swift 9	Citizen	£239	9	240	Option	8K	2 Draft, 3 NLQ	40	160	Optional
PN-48	Citizen	£325	24	360	No	4K	2 NLQ	53	–	No
LC-100	Star	£219	9	240	Yes	2K	1 Draft, 4 NLQ	37.5	150	Optional
LC24-100	Star	£239	24	360	Option	16K	1 Draft, 5 NLQ	53	160	Optional
LQ-100	Epson	£245	24	360	No	11K	1 Draft, 5 NLQ	60	167	Yes
LX-100	Epson	£189	9	240	No	4K	1 Draft, 2 NLQ	40	200	Yes

Note: Speed ratings are taken when printing at 10 characters per inch.

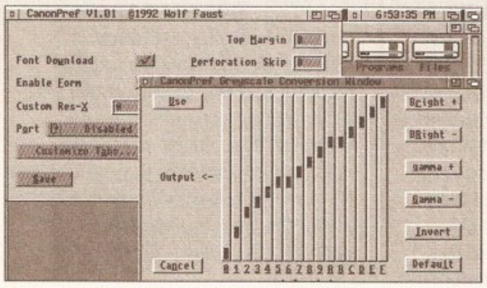
INKJET PRINTERS

Model	Supplier	Price	Nozzles	DPI	Buffer	Typefaces	Speed (NLQ)	Speed (Draft)	Sheet Feeder
BJ-10ex	Canon	£299	64	360	20K	1 Draft, 4 NLQ	83	83	Optional
BJ-300	Canon	£495	64	360	30K	1 Draft, 3 NLQ	150	300	Optional
ProJet	Citizen	£496	50	300	24K	2 Draft, 3 NLQ	120	360	Yes
SQ-870	Epson	£659	64	360	16K	1 Draft, 8 NLQ	200	550	Optional
Diconix 701	Kodak	£399	50	300	24K	1 Draft, 2 NLQ	120	200	No
B-100	Fujitsu	£349	50	300	8K	3 NLQ	80	160	Optional
B-200	Fujitsu	£499	50	300	8K	2 Draft, 3 NLQ	120	180	Yes

LASER/LED PRINTERS

Model	Supplier	Price	Memory	Expanded	DPI	Speed (*)	Typefaces	Emulations
Ricoh LP1200	Silica	£820	2Mb	4Mb	400dpi	6ppm	6	HP LaserJet, HPGL/2, EpsonX, IBM
EPL-4000	Epson	£799	512K	5.5Mb	300dpi	6ppm	2	HP LaserJet, EpsonX
LaserPrinter 4	Star	£1173	1Mb	5Mb	300dpi	4ppm	4	HP LaserJet, HPGL/2
LBP-4 Plus	Canon	£1175	512K	2.5Mb	300dpi	4ppm	5	EpsonX, IBM, Diablo, Canon
OL400	Oki	£449	512K	2.0Mb	300dpi	4ppm	4	HP LaserJet, IBM, Diablo

Note: Because laser printers can only produce whole pages at a time (see page 15), their speed is measured by the number of pages that they can output in one minute, rather than the Characters Per Second used for dot matrix and inkjet machines. The units of laser speed are therefore referred to as PPM (Pages Per Minute).



Canon's rage of printer drivers will enable you to print at full resolution on any of its inkjets, giving a maximum of 360 by 360 dpi output

300 and LBP range of bubblejet and laser printers. The drivers also include a couple of extra utilities that enable you to fine-tune the printing process and even download standard Amiga bitmapped fonts to certain printers.

Star also claims to have produced Amiga printer drivers, although I must admit that I still haven't seen them (despite badgering Star for months!). If you buy a Star printer, you should therefore hassle your supplier or contact Star directly to make sure that you get the right one. Star claims to have sent these drivers to major distributors, so getting hold of them shouldn't be that tough.

One of the worst Workbench printer drivers was the old and faithful HP LaserJet driver. After years of user moaning, Commodore has addressed this problem with a brand spanking new driver which is now bundled with Workbench 3.0 on the A1200 and 4000 machines. Hopefully the rest of us should see this when Workbench 2.1 is finally released (where is it, Commodore?).

If you can't wait that long, Silica Systems has stepped into the foray by announcing the impending release of a new HP LaserJet 3 driver written by IrseeSoft (the company behind Citizen's *Print Manager*). Written specifically for the Ricoh LP1200 laser printer, Silica claims that the new driver supports the Ricoh's maximum 400 dpi printing mode. However, it should also be usable on other HP LaserJet lasers.

ENHANCE YOUR PRINTER

Third-party software vendors have been quick to jump on the printer bandwagon with the release of several very good printing utilities. Designed to improve and even extend the printing abilities of the Workbench printer drivers, these products are well worth considering if you want to get the very best from your printer.

TURBOPRINT PRO

£49.99 HB Marketing
☎ (0753) 686000

German developer IrseeSoft has decided that the best way to improve upon the Workbench printer software is to scrap it altogether. *TurboPrint Professional* includes not only its own range of printer drivers, but also a brand new 'printer.device' (the operating system device that handles printers). The result is a program that not only works faster than the Workbench drivers, but is capable of producing considerably better results. *TurboPrint Professional* gives you extensive control over the printing process. You are even given the power to change the dither pattern used when printing pictures.

TRUEPRINT/24

£54.95 Silica Systems
☎ (081) 309 1111

ASDG's answer to the problem of printing 24-bit pictures on a printer is *TruePrint/24*, a stand-alone version of the 'Save To Preferences' Saver module from *Art Department Pro 2.1*. *TruePrint/24* enables you to print 24-bit images with considerably more shading than would normally be possible if the image was converted to HAM and printed from within a HAM paint program. For 24-bit fans who don't already own *AdPro 2.1*, *TruePrint/24* is a must.

If you were lucky enough to find an Amiga lurking at the bottom of your Christmas stocking and you're also new to this magazine, we'd like to take this opportunity to welcome you to the fascinating and very rewarding world of Amiga computing.

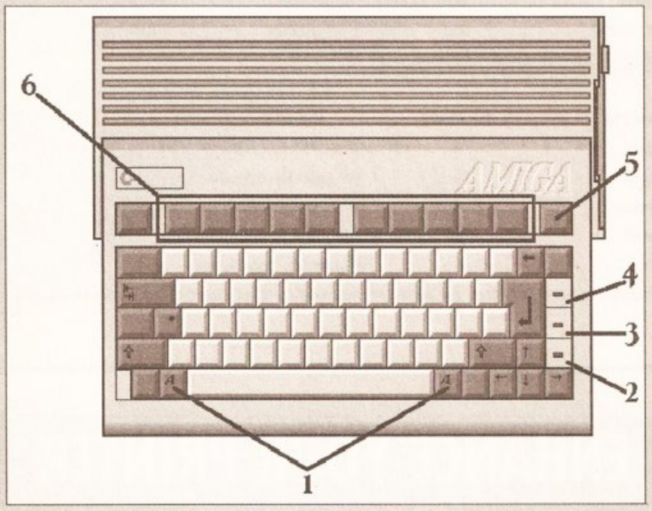
You're now the proud owner of what is undoubtedly the most powerful and most sophisticated home computer ever devised. Offering the most gorgeous graphics, scintillating sound and mouth-watering music *(eh? – Ed.)*, it's easy to see why the Amiga continues to be the most popular home computer ever produced. What's more, you're now one of the elite – you're an Amiga user.

The computer that you own is just one of a whole family of personal computers produced by Commodore bearing the Amiga name. Ranging from the 'home' Amigas (the A600 and A1200) right up to the workstation-like A4000, the Amiga range offers unparalleled power for very little cash. Since the release of the original Amiga A1000 back in 1984, the Amiga has continued to dominate the UK computer scene. It's no wonder either – no other home computer offers the speed and power that the Amiga delivers in such a compact unit. Others have tried to match it, but few have even come close. If you were responsible for choosing the Amiga you now own, then pat yourself on the back for making such a wise choice – you've earned it.

Over the next six pages, we'll show you all that you need to know to get started with your new acquisition. We also hope to open your eyes to the possibilities that the Amiga delivers – although the Amiga plays a pretty mean game (don't worry, even the techies enjoy a game of *Rainbow Islands* occasionally!), using the Amiga for nothing more than games is like driving a car in first gear. But we're not going to patronise you by assuming that you don't already know this – after all, you wouldn't have bought *Amiga Shopper* (the magazine that's serious about your Amiga) if you weren't already aware of what the Amiga is capable of. Desktop publishing, video titling, solid modelling, ray tracing, word processing, programming, Computer-Aided Design – all these applications and more are now within your grasp.

THE AMIGA KEYBOARD

Although many operations can be performed using the Amiga's mouse controller, it's inevitable that you'll eventually have to brush up on your typing skills. The Amiga uses a standard QWERTY format which is the same keyboard layout used on all computers and typewriters. However, you may well have noticed a couple of extra features that you won't find on a typewriter. Here's a rough guide to what those extras do:



1. 'Amiga' keys. These two special keys are used in conjunction with other keys on the Amiga keyboard for selecting operations using 'hot key' combinations. For example, pressing the left 'A' key and 'N' will send the current front screen to the back.

2. Disk LED. Both the A600 and the A1200 are capable of being fitted with an internal IDE hard drive. Providing your machine is equipped with such a drive, this LED will be lit when the Amiga is accessing the hard drive.

3. Floppy LED. When the Amiga accesses a disk in its internal drive, this LED will light up. Never remove a disk when this or the disk LED are lit. This could damage the disk, therefore losing the information that the disk holds.

4. Power LED. When your Amiga it turned on, this LED will remain permanently lit to indicate that the machine is powered up.

5. Help. By itself, the 'Help' key doesn't actually do a great deal. However, some programs will display helpful information when this key is pressed.

6. Function keys. Like the Help key, function keys won't actually do a great deal unless the program that you're running makes use of them. Most programs use them to provide an easy method of selecting common operations without having to remember complex commands.

BLIT ON THE SIDE

What makes the Amiga so wonderful is its advanced custom circuitry, as designed by Commodore specifically for the range. At the heart of the machine are three 'custom' chips that work together to produce the amazing graphics and sound that have made the Amiga famous. The most famous of these three is Agnus, the chip responsible for the Amiga's impressive graphics. Possibly the most infamous aspect of Agnus is the blitter, a device designed to allow the Amiga to move large chunks of graphic from one place to another, and to draw lines and filled polygons faster than even the fastest processor.

Blitter stands for 'Block Image Transfer', but the Amiga's blitter is capable of so much more than just copying graphics from one place to another. As Commodore is keen to point out, the Amiga's blitter should technically be renamed a 'Blimmer' (Block Image Manipulator) because of its powerful image manipulation facilities. The Amiga's blitter offers 256 image manipulation functions which allow the blitter to transform graphic data virtually in real time. Add to this the blitter's ability to draw lines and polygons at a rate of thousands per second and you've got a machine that is ideal for 3D modelling – or indeed any application that requires the high speed transfer of graphic information.

Agnus is backed up by two other very specialised custom chips – Denise and Paula. Denise is responsible for handling the Amiga's screen display. Working in conjunction with Agnus, Denise is capable of not only changing the colour palette of a screen at any point, but also its resolution. This facility is used extensively by the Amiga's operating system and Workbench environment to allow multiple screens to be opened and even displayed simultaneously. Combine this with its powerful multitasking operating system, and it's easy to see why the Amiga still offers the best multitasking capabilities on any machine.

A MULTITUDE OF SKILLS

If you've never used a machine that offers multitasking capabilities, then you're in for bit of a shock. Unlike a traditional computer that is only capable of running one program at any one time, the Amiga can run many different programs simultaneously, each of which can have their own screens and windows. With the development of ARexx, the Amiga's powerful multiprocess communications language, you can even have programs from different manufacturers sharing information and working together. Imagine the possibilities of running a word

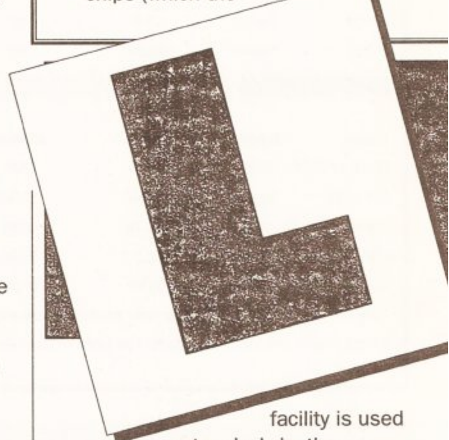
JARGON BUSTING •

Agnus – Agnus is the Amiga's graphics chip, a custom processor that can run independently of the main one.

Blitter – This is the key to the Amiga's high speed graphics capabilities, a special piece of circuitry inside Agnus that allows the Amiga to copy areas of the screen and draw lines and polygons at a frighteningly fast rate. The blitter allows the Amiga to produce stunning animation and lightning-fast 3D graphics.

Copper – A co-processor built into Denise that can changing certain aspects of the Amiga's screen display (colour palette, or resolution, for instance) at any point on the screen.

Custom chips – What separates the Amiga from the competition are its powerful custom chips. These chips (which the



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techies called the 'PAD' chips) have been specifically designed to handle the Amiga's powerful graphics and sound capabilities.

Denise – A chip inside the Amiga that is responsible for forming complex screen displays.

HAM – A special screen mode for displaying up to 4096 colours on screen at once.

HAM-8 – A1200 and A4000 owners have access to a more advanced version of HAM that takes advantage of the special 'AGA' custom graphic chips inside those machines. HAM-8 is capable of displaying a maximum of 262,000 different colours on screen at once, giving almost photographic results.

Kickstart – The name of the chip inside your Amiga that holds its operating system. When new versions of the operating system are released, all you have to do is to change this chip and your Amiga remains right up to date.

Mouse – A small electronic device used to control the movement of an on-screen mouse 'pointer'. It contains two 'buttons' (used for selecting icons and such like) and a small rubber-coated ball whose movement is measured when the mouse is moved across a flat surface.

Multitasking – A sophisticated part of the Amiga's design that allows it to run more than one program at any one time. You could, for example, run a paint package in one screen and a word processor in another, while a ray tracing program generates a 3D scene. The Amiga is still the only personal computer available on the market that offers this very useful facility as standard.

Operating System – A program built into every Amiga that acts as a mediator between the Amiga's hardware and programs. The operating system is also responsible for the Amiga's multitasking abilities and the low-level routines used by the machine's powerful windowing system, Workbench.

Paula – A chip inside the Amiga that has a dual role. It is responsible for handling the Amiga's various ports, and the Amiga's impressive 4-channel sound.

Processor – The heart of the Amiga is its processor, a Motorola 68000, which carries out all calculations and keeps the rest of the machine in check. The processor is best thought of as the Amiga's 'brain'.

RGB Monitor – Although the Amiga's display can be viewed on a standard television, an RGB monitor provides considerably better picture quality both in terms of detail and colour.

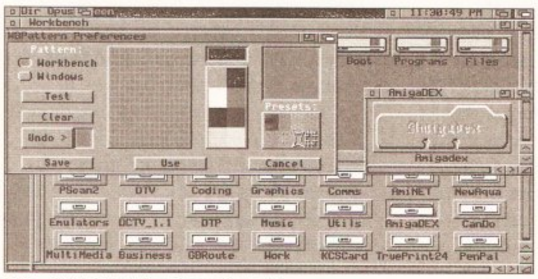
Samples – The Amiga's entire sound capabilities are based on the theory of sampling. Sampling is a process that converts an analog sound signal into a digital format that can be stored, manipulated and then played back.

WIMP – The Amiga's Workbench environment is what is known as a 'WIMP' system. WIMP stands for Window, Icon, Menu, Pointer and is a very simple method of performing complex tasks using an on-screen mouse 'pointer'.

Workbench – The Workbench is a program that enables you to carry out common operations (such as running programs) and general disk tasks by clicking on icons with the mouse pointer.

INTRODUCING the AMIGA

If you found an Amiga in your Christmas stocking, then don't panic! Kindly Jason Holborn is here to explain all the basics



The Amiga's Workbench is the latest in a long line of mouse-controlled WIMP systems

processor in one screen, a paint package, a music composition program and the Workbench simultaneously without having to reload each every time you wish to use them. Once you've used multitasking, you'll never want to look back to the 'bad old days' of only running one program at once.

Last but not least we have Paula, the Amiga's much heralded sound chip. Although others may have now surpassed it, Paula is still a pretty impressive slither of silicon which is capable of playing up to four tracks of sampled audio simultaneously in full stereo sound.

WORKING THE BENCH

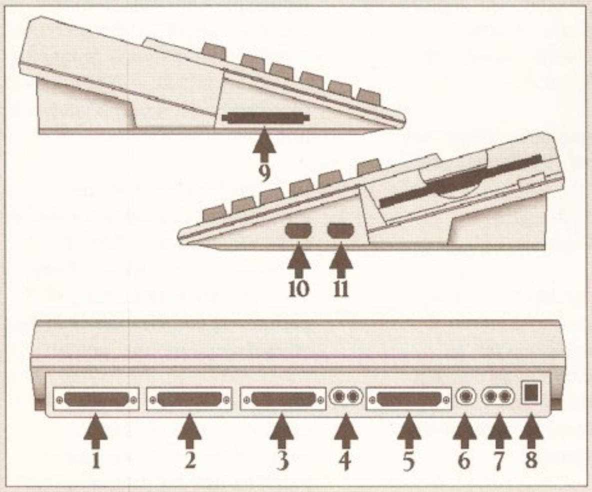
The computers that we have today are a far cry from the complex, room-filling beasts that were the order of the day little more than twenty years ago. These monolithic creatures were not only expensive, but were terribly complex to use. Each and every operation that you wanted to carry out had to be entered as a cryptic command via the computer's keyboard. This led to the evolution of a bizarre sub-culture of super-intelligent 'whizz-kids' who seemed to be the only humans capable of grasping this technology.

However, thanks to some bright spark at Xerox's Research Laboratories, this sort of elitism was brought to an end with the development of the WIMP environment. Instead of typing in complex commands, computer users could control their machines by moving an on-screen pointer around the screen using a mouse controller. By simply clicking the mouse button when the pointer was directly over a small pictorial representation (called an 'icon') of what you were trying to do, the computer would perform the operation that was associated with that icon.

The Amiga is only one of many machines that have embraced this wonderful method of controlling a computer. The Amiga's WIMP system is called Intuition and built upon this is the Amiga Workbench. The Workbench will provide you with a quick and easy-to-learn method of controlling the Amiga. Simply by learning a few basic principles, you'll be able to perform all sorts of common computer operations such as running programs and copying, deleting and renaming files. Don't feel intimidated by the Amiga's Workbench – after a little practice,

PORTS OF CALL

A basic Amiga is a pretty mean performer by anyone's standards, but its range of ports and interfaces will allow you to extend your machine still further. Here's what all those obscure looking connectors do:



6. Comp. Another form of video output is the COMP. port – the Amiga's video display in composite format. This can be fed into any monitor, television or video that accepts a composite signal.

1. Disk drive. For some operations, a second disk drive is a definite must. This port will allow you to connect up to three extra disk drives to the Amiga, making many tasks considerably easier.

2. Serial. Conforming to the ubiquitous RS232 standard, the Amiga's serial port is used to connect devices such as modems and serial printers to your machine. Developers have also used this port extensively for MIDI interfaces, touch tablets and even home electronics kits.

3. Parallel. By far the most useful connector on the Amiga is its parallel port. Although designed specifically for the connection of a parallel printer, the Amiga's parallel port can be used to connect a whole host of different add-ons, including sound samplers, video digitisers, hand scanners and even hard disk drives.

4. Audio connectors. If you want to really appreciate the Amiga's wonderful sound capabilities, then you should connect it to a hi-fi through these ports. Two sound channels are available on each port, giving true stereo sound.

5. Video. The Amiga's video port is used to connect an RGB monitor to your machine. Because the screen display is transmitted in RGB form, the picture quality obtained from a monitor is considerably better than the results that you'll get using the RF Modulator connector.

7. RF modulator. If you don't own an RGB monitor, then this connector provides a convenient method of displaying the output from your Amiga. The RF Modulator socket outputs a standard RF video signal which can be connected to the 'ariel in' socket on any television.

8. Power. Undoubtedly the most important connector of all, your Amiga is pretty useless unless it's plugged in here.

9. PCMCIA. Most of the Amiga's connectors are pretty self explanatory, but this one is probably not so obvious. PCMCIA is a fairly new development that allows the Amiga to use industry standard PCMCIA cards. These credit card-sized devices provide a method of expanding the Amiga. Not only can RAM expansions and memory cards (a memory card holds its contents even when the Amiga is turned off) be used, but third-party developers are already hard at work producing add-ons such as modems, sound samplers, hard drives and digitisers that will connect to the Amiga via this port.

10. Mouse/Joystick. The Amiga includes two standard Atari-style 9-pin joystick connectors, the first of which is also used to connect a mouse controller to your Amiga.

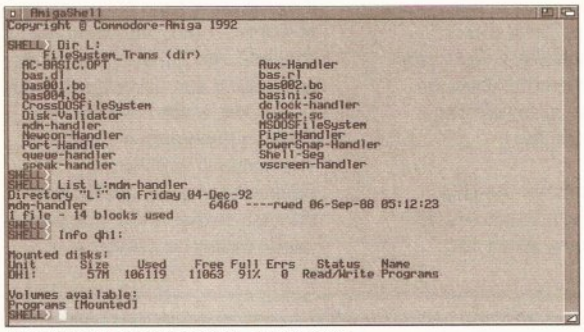
11. Joystick 2. If you enjoy the occasional game, then this port can be used to connect any standard Atari-style digital joystick to your Amiga.

you'll find it a very logical and straightforward method of controlling the Amiga's operation.

BE SURE OF SHELL

The Amiga's Workbench provides all the power that most people need to operate their Amigas, but there will inevitably come a time when you start to feel held back by all those windows, icons and menus. That's when it's time to turn to the Shell, gateway to the Amiga's advanced disk operating system.

Using the Shell is just like using a conventional command line-based computer such as the early PCs. But don't let this put you off – although the Shell and its many commands may seem daunting at first, it provides unparalleled control over the Amiga's disk operating system. Virtually all of the tasks that you can achieve from the Workbench can be repeated within the Shell, simply by entering the appropriate Shell command. Although it's not quite as approachable as the Workbench, AmigaDOS provides a more direct method of carrying out common disk operations such as formatting disks, copying files, and more.



Compared to Workbench, AmigaDOS provides a far more direct method of performing many disk operations

Another very powerful aspect of the Shell is its ability to perform long lists of commands held within what is known as a 'script' file. Although each command is a separate AmigaDOS command in its own right, the Shell executes the script as if it were running a program. Script files can be very useful when you need to perform a disk operation involving many complex steps. By simply grouping these steps into a script file, the entire process can be achieved by typing just a single command in the Shell.

Look out for Mark Smiddy's AmigaDOS column in every issue of *Amiga Shopper* (on pages 89-92 of this issue, for instance). Mark is generally regarded as one of the top AmigaDOS experts in this country, and every month he delves ever deeper into the mysteries of AmigaDOS. If you want to know how your Amiga's disk operating system ticks, then this is clearly the man to listen to.

LEANER AND MEANER

If you think the Amiga is already impressive, you ain't seen nothin' yet! With a little bit of extra hardware, you can transform your Amiga into a real mean performer that will not only be more fun to use, but more productive too. Here's a brief run-down of the add-ons you may want to consider:

● **Second Drive.** Ask most Amiga users what the first peripheral that they bought was and chances are they'll say a second drive. For operations such as copying disks and accessing the Amiga's powerful AmigaDOS Shell, a second drive isn't a luxury – it's an absolute necessity. You may find that some programs come on more than one disk too – with a second drive attached to your machine, you'll find using that program considerably easier because you won't have to keep swapping disks while it's running.

● **RAM Expansion.** If you've upgraded to the Amiga from an 8-bit machine, 1Mb of RAM may sound

CUSTOMIS

If there's a particular aspect of the Amiga's Workbench that doesn't quite appeal to you, then you can change it to suit your own personal preferences. Take the Workbench colour palette, for example – Commodore knows that grey on black, white and blue may not be everybody's cup of tea, so a palette tool is provided that allows you to permanently change the screen palette. (Well, until you decide to change it again, that is.)

The key to this customising power is the Amiga Preferences system, a selection of individual programs designed to allow you to fine tune and change certain aspects of the Amiga's operation to suit your own taste and computer setup. The Amiga Preferences aren't just restricted to cosmetic changes, though – they are also used to tell the Amiga the type of screen mode you would like the Workbench to use, the type of printer connected to your Amiga, and so on. If you'd like to add 'go faster' stripes and fancy chrome strips to your Amiga, then read on.

● **Input.** The Input utility allows you to fine tune the speed of certain system

like a lot – but, believe me, it ain't. These days, a 1Mb machine is barely adequate for running anything other than the simplest of applications. If you want to get involved in any form of serious graphics, video or DTP work, then extra RAM will definitely be needed. How much you fit depends entirely upon your own budget – if you can afford it though, a total of 4Mb of RAM is generally regarded as comfortable.

● **Hard Drive.** A hard drive is the next logical step up from the second drive that we mentioned earlier. Due to its speed and very high storage capacity (even the smallest A600 hard drive can store up to twenty disks' worth of information!), a hard drive will give you almost instant access to all your programs and data files. Once you've used a hard disk-based Amiga, you'll never want to touch floppies again!

Hard drives come in a diverse range of different sizes. Don't automatically assume that a 20Mb hard drive will be suitable. Although it may seem large at first, you'd be surprised just how quickly this can fill up with *DPaint* pictures, sound samples, application programs and the like. More than 100Mb is possibly a little extravagant, but you'd possibly live to regret buying anything smaller than 50Mb.

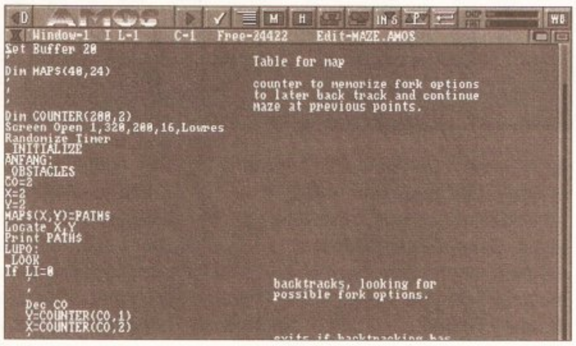
● **Printer.** If you'd like to keep a permanent record of your work, then a printer is a must. The printer is the sort of device that can find a use in virtually every application of the Amiga that you dare to mention. Whether you're a programmer, musician, artist or writer, a printer is bound to prove a godsend.

● **RGB Monitor.** While running an Amiga through a television is fine for games, you really do need an RGB monitor if you intend using your Amiga at all seriously. RGB monitors provide far better picture quality than a conventional TV, enabling you to make out the smallest on-screen text with ease.

● **Accelerator.** The Amiga's a pretty swift character, but it can be made much faster by fitting a processor accelerator. Processor accelerators come in a variety of different flavours ranging from basic 68020 cards, right up to processor cards based around the same processor that you'll find in the A4000, the high-speed Motorola 68040.

TAKING CONTROL

One of the most fascinating and rewarding aspects of owning a computer is programming it yourself. In the case of the Amiga, programming can be even more



***AMOS Professional* – probably the most powerful Amiga programming language in the world?**

rewarding simply because of the Amiga's impressive hardware and what that hardware makes possible. Ultra-fast scrolling, sprites and music are all within the reach of the would-be programmer, providing of course that you're equipped with the right programming tools.

There's a whole range of different programming languages available for the Amiga, which are suitable for both new and advanced users. But by far the best introduction to Amiga programming is *Easy AMOS* (from Europress), a very powerful BASIC-like language that will allow even the greenest of beginners to take advantage of the Amiga's powerful graphics and sound hardware within their own programs. The *Easy AMOS* manual is written in a tutorial format, so you don't even need to buy a book on programming to learn the language.

When you feel comfortable with *Easy AMOS* programming, you can then move up to the more advanced version of *AMOS, AMOS Professional. AMOS Pro* uses the same easy-to-use English-like command set as its little brother, but offers unrivalled programming power that will allow you to harness your Amiga's hardware. Ultra-fast scrolling, sprites and interrupt-driven music are only a small selection of the facilities offered by this mould-breaking language.

Every month we dedicate a whole section of the magazine to *AMOS* programming. Composed and compiled by my good self, the aptly-named *AMOS Action* column covers many different aspects of programming, ranging from the fundamentals of programming to some quite advanced topics that will teach you all you need to know to write top-notch games in *AMOS* BASIC. I look forward to seeing you there soon!

WORKBENCH • CUSTOMISING WORKBENCH

events, such as how fast the mouse pointer moves across the screen, the maximum length of time between mouse clicks for a 'double click' selection to be accepted, and the key repeat speed.

● **IControl.** As we discussed earlier, some Workbench events can be performed without having to select them from a pull-down menu or icon using 'hot keys'. The IControl utility allows you to specify key combinations for screen swapping and gadget selection.

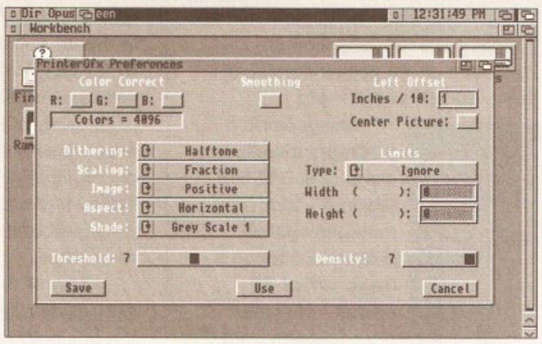
● **Palette.** If the Workbench's black, white and blue on grey colour palette doesn't inspire you, then change them to your own personal choice using this utility. All the colours can be selected from the Amiga's full 4096 or 16.7 million (for A1200 owners) colour palette.

● **WBPattern.** The WBPattern utility enables you to design a regular pattern which can be used as a backdrop on the Workbench screen behind all the various disk icons and windows. The WBPattern tool provides a selection of default patterns, but you can also design your own using *DPaint*-like drawing tools.

● **Font.** The Font utility is used to specify the font (in other words, the text style) used for all of the text which appears on the Workbench. Any standard Amiga bitmapped font you can find may be used for the Workbench's pull down menus, window titles and icon text.

● **Pointer.** Feeling artistic? As with the Workbench background pattern, you can use the Pointer utility to modify the appearance and colour palette of the mouse pointer graphic.

● **Screenmode.** The Workbench can be opened in any one of a variety of different screen modes, which allows you a potential maximum of 16 colours. The ScreenMode utility allows you to select the mode that you want and the number of colours to be used.



PrinterGFX gives you extensive control over the printing of graphics

● **OverScan.** Overscanning is a technique which allows the Amiga to expand the area used to display text and graphics so that the visual 'border' around the screen is removed. The OverScan utility gives you the ability to stretch the Workbench in both the horizontal and vertical directions.

● **Printer.** Not all printers are created equal, so you must install a suitable printer driver if you want the Amiga to communicate with your printer in its native tongue. The Printer utility simply selects the printer driver to be used and sets various page definitions such as the size of the paper and type of paper which the printer will be using.

● **PrinterGFX.** PrinterGFX is another utility which enables you to fine tune the way a printer works with your Amiga. This utility is used to control different aspects of graphic printouts – the print density, colour correction, anti-aliasing and so on.

● **Serial.** If you intend to use a serial printer on your Amiga, then it is necessary to configure the Amiga's serial port so that the protocols used by the Amiga and your printer match. The Serial utility enables you to set the baud rate, stop bits and all the other serial-type parameters that have made the serial port such a firm favourite amongst users.

● **Time.** Although more recent Amigas don't come with a battery backed up clock as standard, every Amiga has a system clock that ticks away whilst your Amiga is turned on. If you want to keep your Amiga running on time, then use the Time utility to set both the time and date.

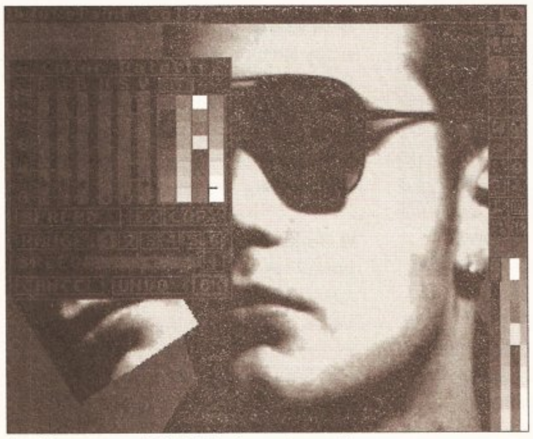
APPLICATIONS GUIDE

In these days of Super Mario Brothers and bright blue hedgehogs called Sonic, the Amiga can still hold its head up high with the gaming elite. Although you'll hardly ever see games mentioned at all in *Amiga Shopper*, we don't necessarily believe that playing games is a bad thing – we just think that there's far more to owning an Amiga than wielding a joystick.

Don't forget that if the more serious aspects of the Amiga interest you, then *Amiga Shopper* is the magazine to read. No other magazine on the market has the in-depth tutorials, reviews and features that we offer. What's more, you'll never find pages of game reviews cluttering up vital pages of the magazine. *Amiga Shopper* is 100% serious about your Amiga.

GRAPHIC DESIGNS

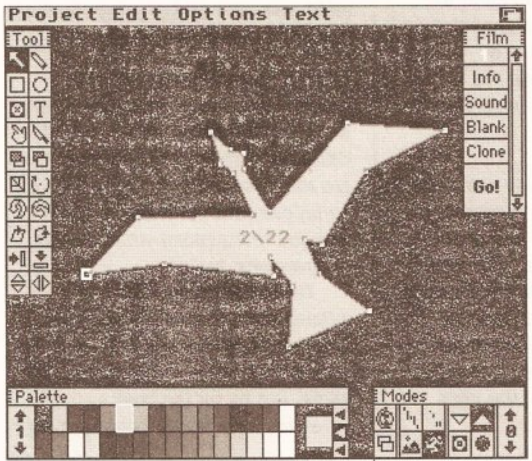
With such powerful graphics chips at your disposal, it's not surprising that the Amiga leads the field in computer graphics. However, computer graphics is a very broad term – the Amiga's capabilities are so wide-ranging that you can use them for a whole host of graphic-related applications. These range from straight pixel painting in *DPaint*, to digitising, solid modelling, ray



Just because *DPaint* is free, doesn't mean that it isn't any good. *DPaint* is still generally regarded as the best Amiga paint program

tracing, image processing and even *Terminator 2*-like morphing effects.

For most people though, their first experience of the wonders of computer graphics are with Electronic Arts' brilliant *Deluxe Paint*, which is now bundled with most Amigas sold. *DPaint* is a wonderful program that turns your Amiga screen into a sort of computerised easel. Using *DPaint* and your Amiga's mouse, you can paint pictures using the Amiga's full range of screen modes and colour palettes. *DPaint* provides a full range of



Domark's *Fantavision* is a fun little animation program which is particularly suitable for children

painting tools which will allow you to unleash the artist trapped inside you. Airbrushes, stencils, perspective and gradient fills are only a small selection of the powerful painting tools that *DPaint* delivers.

Amiga paint programs usually come in one of two flavours – low-resolution paint programs offering a maximum of 32 colours on screen at once (chosen from the Amiga's 4096 colour palette) and HAM paint programs. These latter programs aren't quite as flexible, but they do allow the Amiga's entire range of colours to be displayed on screen at once. Amiga A1200 owners can also look forward to a new version of *DPaint*, *DPaint AA*, which can use the new 256-colour and HAM-8 screen modes offered by the new 'AGA' chip set.

GET ANIMATED

Thanks to the Amiga's ultra-fast blitter hardware which we were talking about earlier, you can use your Amiga to create animations that would have turned Disney animators green with envy little more than ten years ago. Just like the more pedestrian conventional paint programs, Amiga animation programs are available in a variety of different flavours. Indeed, the chances are that you already own one of the most popular animation programs available – *Deluxe Paint*.

DPaint by itself can be used to create some fairly sophisticated animations, using a variety of different techniques. The most basic way to create an animation requires you to draw each frame individually – as you probably already appreciate, this can be a very time-consuming task. *DPaint* can make the process of producing an animation considerably easier though using its powerful 'Brush Animation' and morphing facilities. Brush animation allows you to create some quite complex effects by rotating and moving brushes in 3 dimensions. This facility has been extensively used to create the sort of impressive animated logos you see on TV. Finally, you also have the facility to create 'morphed' brushes which will transform from one image to another.

Many of the 3D modelling and ray tracing programs that we cover in the box in the middle of this page will also allow you to create animations. These programs are capable of producing animations of solid objects moving in 3D space. What's more, most of the hard work is handled for you. All you have to do is to specify where an object should move into 3D space and the number of frames required, then the 3D modelling program does the rest.

Other animation programs worth checking out include Rombo's excellent *Take-2* video sequencer and Domark's *Fantavision* (as shown in the picture above). *Fantavision* is a very simple but very entertaining animation program that is particularly suitable for children – perhaps in an educational environment.

VIDEO NICETIES

One of the Amiga's greatest selling points is its ability to overlay graphics onto live video footage. In other words, you can remove the background colour from the Amiga's screen display and replace it with video footage from a variety of different sources.

The key to all this video power is an amazing box of tricks called a genlock. Amiga genlocks can be bought for as little £100 these days, so you'd be surprised just how cheap it is to set up your own video studio using your Amiga.

Once you're equipped with a genlock, a wide range of programs are available that will allow you to add fancy effects, scroll titles up, down and across the screen, or you can even edit video footage on your Amiga! Using Roctec's *RocKey* device, you can even superimpose live video on top of the Amiga's graphics (the opposite effect to a genlock), enabling you to produce your own weather forecasts and weird rock videos.

If you want to keep in touch with what's really happening in the world of Amiga video work, then *Amiga Shopper* is the magazine to read. Every month you'll find a column written by our resident video expert, Gary Whiteley. Gary has been involved in the video industry for an almost embarrassing number of years, so you can be sure that he

3D

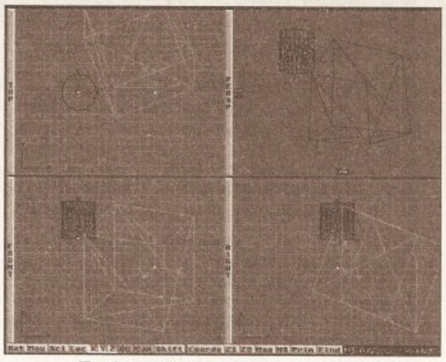
Once you've mastered the art of 2D pixel painting, the next big step is 3D modelling and ray tracing. 3D modelling is a process which allows you to visualise 3D scenes by building up the objects that inhabit those scenes from graphic 'primitives', such as cubes and spheres. Obviously the 2D screen of your Amiga monitor cannot display a true 3D image; modelling programs get around this limitation using a technique that is generally accepted as the best available – the tri-view editor. As its name suggests, a tri-view editor gives you three views of your 3D scene – front, side and top.

What's so impressive about 3D modelling programs is that the actual process of generating your 3D scene is handled automatically by your Amiga using what the techies call 'rendering'. The most advanced form of 3D rendering is ray tracing, a technique that generates 3D scenes by calculating how the light produced by a

GRAPHICS

(hypothetical) light source within your 3D scene would reflect off objects within the scene.

Ray tracing a 3D scene produces images of almost photographic quality, complete with reflections and shadows. Even if you've never played with a ray tracing program before, chances are that you've already seen what ray tracing is capable of – films such as *The Lawnmower Man* and *Terminator 2* use ray tracing extensively to produce the amazing computer graphics that have become a major selling point. A wide variety of ray tracing programs are available for the Amiga, but the two market leaders are Digital Multimedia's *Imagine 2* and Alternative Image's *Real 3D*.



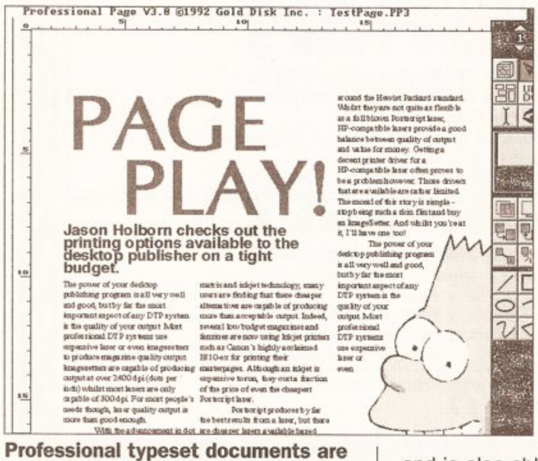
Explore the fascinating world of 3D graphics with *Imagine 2*

Another very fascinating graphic technique is 'morphing', the latest craze in computer graphics. Morphing is a very powerful technique that allows you to transform one graphic into another, with the computer generating the images in between. While seen more and more in TV ads nowadays, possibly the best-known use of morphing is to be found in the film *Terminator 2*. Morphing was used to create the many scenes where the evil Terminator, the T-1000, moulds itself into a variety of different shapes. Several Amiga morphing programs are already available including ASDG's *MorphPlus* and GVP's *CineMorph*.

knows a thing or two about genlocks and the plethora of other Amiga video products around.

PUBLISH AND BE...

If there is one application that the arrival of low-cost high-performance personal computers has delivered to the average user, it must surely be desktop publishing. A desktop publishing program allows you to create brochures, fanzines, posters and even magazines, complete with high-quality text and illustrations. You're already looking at a fine example of what desktop publishing can do – all of *Amiga Shopper* is 'laid out' using our own (sadly not Amiga-based) desktop publishing system, *Quark XPress*.



Professional typeset documents are finally within your reach with Gold Disk's *Professional Page 3.0*

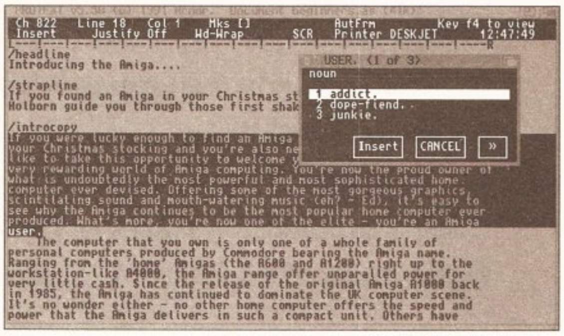
The Amiga offers a very impressive range of desktop publishing programs, but the big two are undoubtedly Gold Disk's *Professional Page 3.0* and Soft-Logik's *PageStream 2.2*. Both these programs can output high-quality DTP documents to any printer supported by the Amiga including dot matrix, inkjet and laser printers. Through the use of 'outline' fonts, text is printed at the highest resolution of your printer, so even the naffest of 9-pins is capable of some pretty impressive results. For the ultimate in quality, however, both programs also fully support the mighty PostScript language.

For beginners, Gold Disk's *PageSetter 2* is worth considering. Based around Gold Disk's own *Professional Page*, *PageSetter 2* has been specifically designed with the beginner in mind. It uses the same outline font technology to give excellent and unrivalled print quality and is also able to support bitmapped pictures and structured illustrations within documents.

If you want to learn the subtle art of desktop publishing, then *Amiga Shopper* is the magazine to read. Every month we feature a desktop publishing column written by our resident DTP guru, Jeff Walker. Jeff produces a fanzine called *JAM* using an Amiga running *Professional Page*, so he's more than qualified to comment on the pros and cons of Amiga DTP in a working environment.

BUSINESS MATTERS

Despite its obvious flair for the more creative and artistic applications, the Amiga is also a pretty capable business machine. Whether you want to keep your accounts in order, keep track of business associates and friends or write a letter to your friendly bank manager, you'll find the Amiga more than qualified for the job. The three most popular types of business software available are the word processor, the spreadsheet and the database, all of which are commonly available on the Amiga.



If you can't spell for toffee, then a good word processor is a must

The Amiga's powerful graphic capabilities have spawned a new generation of word processors that steal more than a couple of good ideas from desktop publishing systems. These new 'word publishers' (also known as 'document processors') offer the raw text editing power that has made word processors so popular, combined with the sort of page layout power that was previously restricted to desktop publishing systems. Not only can you use any standard Amiga font within your documents, but nowadays word publisher programs even allow you to incorporate pictures into the bargain.

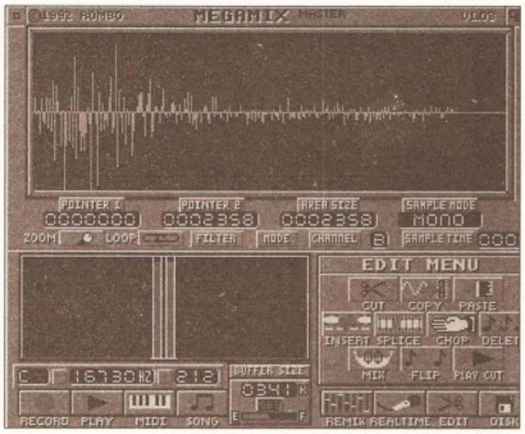
Word processors can do a lot more than just process words. If your spelling or vocabulary is not quite up to scratch, then the Amiga can even help with these. Word processors such as Arnor's excellent *Protext 5.5* (which, incidentally, was used to write this feature) offer spell checking facilities and even a thesaurus, a handy utility which can suggest alternatives to a given word.

THE SOUND OF MUSIC

If there's a tune just waiting to burst out of you, then the Amiga is the machine to own. Thanks to its advanced sound hardware, you can write music on your Amiga that uses sounds sampled from the real world. A huge library of sampled sounds is available, but if you wish to grab your own, you just need a sound sampler.

A sound sampler is simply a device that converts an audio signal from any CD player, tape deck or microphone into a digital format that can be processed and then played back in real time by your Amiga. Compared to the price of professional samplers, Amiga samplers are a steal – starting at around £20, you can sample sounds without breaking the bank. Even if you're not particularly musical, samplers can also be a source of many hours of enjoyment. Just tinkering around with samplers can be fun in its own right.

By attaching an inexpensive MIDI interface to your Amiga, you can even make music like the pros by using your Amiga as a MIDI sequencer to control external music hardware such as synthesisers, drum machines and samplers. A wide range of MIDI software is available, including some really quite powerful packages that wouldn't look out of place in a professional recording studio. AS



S-S-S-Sample your own sounds with an Amiga sound sampler

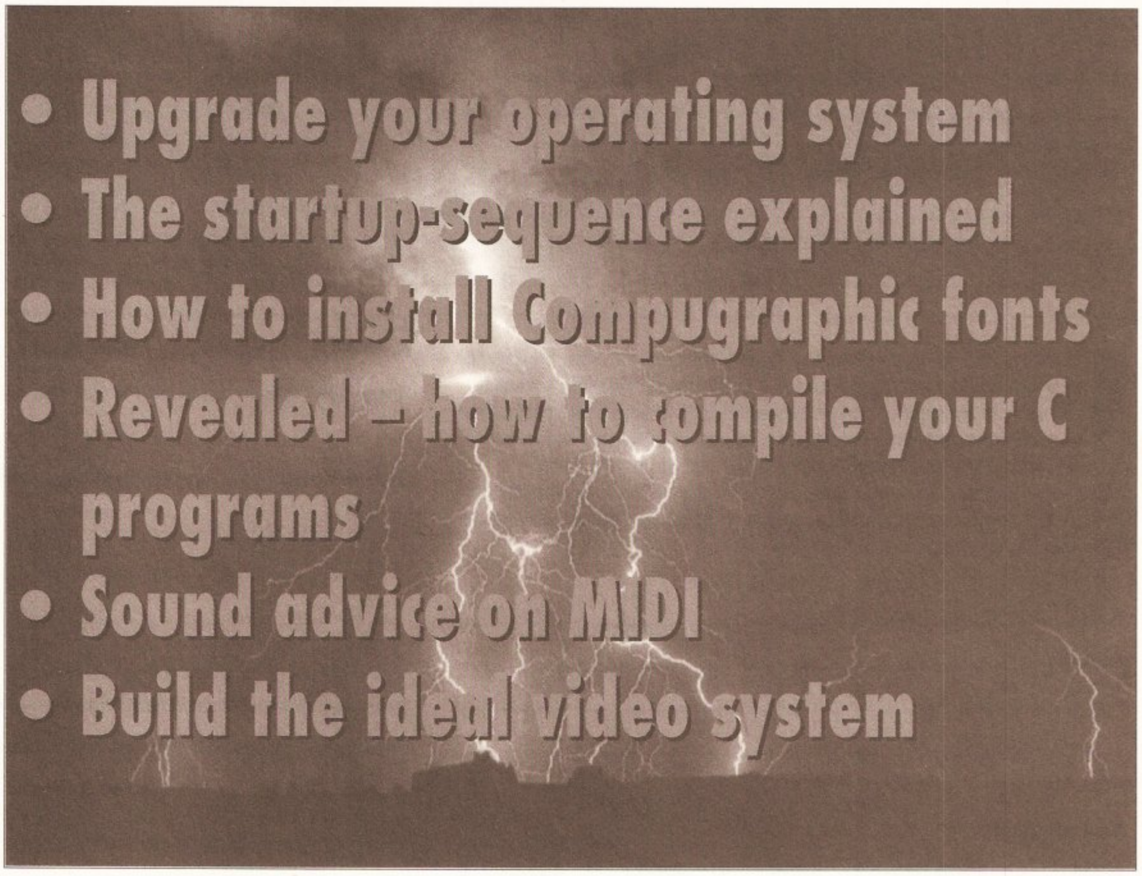
WRITE AWAY!

Amiga Shopper has a regular section devoted to solving users' problems, and welcomes letters from Amiga beginners. If you get into a fix with your new machine then don't delay – send the form on page 32 to *Amiga Answers, Amiga Shopper*, 30 Monmouth Street, Bath, Avon BA1 2BW.

CONTENTS AT-A-GLANCE

OUR EXPERTS TACKLE YOUR REAL-LIFE PROBLEMS

AMIGA ANSWERS



- Upgrade your operating system
- The startup-sequence explained
- How to install Compugraphic fonts
- Revealed – how to compile your C programs
- Sound advice on MIDI
- Build the ideal video system

BLITZ THOSE PROBLEMS!

SO WHAT DO ALL THOSE ICONS MEAN?

Beginners: this icon will appear next to any questions which are 'basic' in content.

General: this icon is used for any general Amiga-related queries.

Caution: be sure that you fully understand the answer before trying it out.

Danger: the answer to this question could well invalidate your warranty – or you!

Hardware: this icon is used to denote questions relating to general hardware.

Buying advice: we use this icon if the question asks us for buying advice.

Printers: this icon denotes a query about printers, printer drivers and so on.

Technical: any queries about programming will have this icon next to them.

Video: this icon relates to any query about using your Amiga with video hardware.

Music: this icon is for questions about MIDI, sampling, synthesizers and so on.

Programs: any program-specific queries have this icon next to them.

Comms: if your question relates to comms, this is the icon that we'll use.

WHATEVER YOUR PROBLEM WITH THE AMIGA, WE ARE HERE TO SOLVE IT

That's the task we have set ourselves in giving you the best possible support for your Amiga. We are confident that our experts can cope with any technical questions you can throw at them. If they don't already know the answer to your problem, they will find it out for you.

We are prepared to deal with any problem you have with the Amiga, from general enquiries about AmigaDOS or Workbench, through questions about specific pieces of software and hardware, to advice on what you need to buy to do a particular task. If it's to do with the Amiga, we will help out. What we cannot do is offer this service over the telephone – do not phone us with your enquiries, but write to us at the address below.

We also cannot enter into personal correspondence – all enquiries will be dealt with in the pages of the magazine. This does mean a bit of a delay in solving your problem, but you'll just have to be a little patient and wait for it to appear in print. You won't get a personal reply even if you enclose an SAE with your letter, so please don't bother.

Send your question on the form below to: Amiga Answers, *Amiga Shopper*, Beauford Court, 30 Monmouth Street, Bath BA1 2BW.

The Amiga Answers panel consists of our consultant editors Mark Smiddy and Jeff Walker – and, of course, our editor Cliff Ramshaw. We will also be calling on the services of all our other contributors, so you won't be able to catch us napping – whatever the subject of your query.

Each panellist will be dealing with queries in their own specialist area(s) so it would help us greatly if, when writing, you label your query envelope with the name of the expert who can solve your particular problem.

Below is a list of areas of expertise. It's a list that we will add to and update every month, so you will know who to write to about any subjects not mentioned here.

Gary Whiteley –	Video
Paul Overaa –	Programming, music
Toby Simpson –	Programming, hardware
Jeff Walker –	Desktop publishing, programming
Mark Smiddy –	AmigaDOS, business, CDTV, hardware projects, hard and floppy disk drives
Jason Holborn –	Public Domain, AMOS
Jolyon Ralph –	Programming, hardware, CDTV
Cliff Ramshaw –	All the other bits and pieces

If you send in a question for the Amiga Answers experts, please fill in and include the form below (or a photocopy if you don't want to cut up your magazine). And please also make sure that you include all the relevant details – version numbers of software and so on – so that we have the best chance of helping you. Send your form and question to: Amiga Answers, *Amiga Shopper*, 30 Monmouth Street, Bath BA1 2BW. Sorry, but we cannot personally reply to any questions – even if you include an SAE.

Name: ____________________

Address: ____________________

____

____

Your machine:

A500 ☐ **A500 Plus** ☐ **A600** ☐ **A1000** ☐ **A1200** ☐

A1500 ☐ **A2000** ☐ **A3000** ☐ **A4000** ☐

Approximate age of machine: __________

Kickstart version (displayed at the 'insert Workbench' prompt)

1.2 ☐ **1.3** ☐ **2.x** ☐

Workbench revision (written on the Workbench disk)

1.2 ☐ **1.3** ☐ **1.3.2** ☐ **2.x** ☐ **3.0** ☐

PCB revision (if known). Do not take your machine apart just to look for this! __________

Total memory fitted (see AVAIL in Shell for 1.3 Workbench) ________

Chip memory available (see AVAIL in Shell) ____________

Agnus chip (if known) ____________

Extra drive #1 (3.5"/5.25") as DF_: Manufacturer ____________

Extra drive #2 (3.5"/5.25") as DF_: Manufacturer ____________

Hard disk: ___Mb as DH_: Manufacturer ____________

Extra RAM fitted – type, size in Mb and manufacturer ____________

Details of any other hardware which could help us to answer your question:

____

____

____

____

Now, use this space to describe your problem, including as much relevant information as possible. Please continue on a separate sheet if necessary.

____

AS 22

NO PROBLEM!

Welcome once more to *Amiga Answers,* the section of the magazine where we endeavour to straighten out your hassles with that wonderful but occasionally stubborn machine, the Amiga. Every month we devote more space and apply more resources than any other Amiga magazine to solving your problems. We receive something like 100 queries a week, so the service is obviously appreciated.

It's my job to co-ordinate the whole thing: sorting through the questions and sending them off to the relevant chappies for the kind of in-depth answers you've come to expect; and compiling them into the lovingly crafted pages which you see before you.

I call on a variety of expertise to make sure you get the answers you need, which is why *Amiga Answers* is so successful. There's Mark Smiddy, industry guru, AmigaDOS-tamer and business applications wizard; Jeff Walker, probably the most knowledgeable Amiga desktop publisher there is; and Jason Holborn, long-time *AMOS* explorer and PD sampler, as well as good all-rounder (or should that be all round good guy?); and Toby Simpson, lead programmer for Millennium and accelerator expert.

If it's a question about video, I'll pass it on to Gary Whiteley, our professional videographer for whom the word 'genlock' means 'mixing Amiga graphics with video for magical results' and for whom the word 'snipwirral' means nothing.

Programming queries are dealt with by Paul Overaa, who's not afraid to code in any language, and who doubles as a MIDI maestro to solve your sequencing slip-ups.

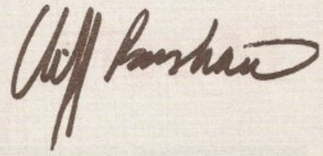
Our hardware guru is Jolyon Ralph. This man knows just about everything about disks, both hard and floppy, and what he doesn't know about memory he's probably forgotten. Communication breakdowns are fixed-up by Dave Winder.

All in all, a formidable team, supplemented by my own not inconsiderable Amiga suss. Let's face it, if we can't answer your question, it's probably one of the Mysteries of the Universe.

This month sees the start of our Code Clinic section (page 56), in which professional programmer Toby Simpson endeavours to iron out the bugs in your programs. He kicks the section off with a look at an assembly language program intended to open a window and change the mouse pointer.

Get those programs rolling in and, of course, *all* of your Amiga problems. We'll sort 'em!

Cheers,



STARTUP-WHAT?

I have had my A500+ for about three months now, but there is one thing still puzzling me: the Startup-sequence. What is it? I know from the title that it is a series of events that happen when the Amiga is booted – but what are these events? What would I use it for? What sort of things go into making up a Startup-sequence? I would be grateful if you could explain this or run an article for beginners like myself. Also, can you recommend a book suitable for beginners like myself.

K Sargeson
Hull

You are quite correct in assuming the Startup-sequence is a set of events that happen when the Amiga is booted (switched on or reset). The file is an AmigaDOS program – more correctly called a script. You can take a look at what it does by typing the following command from Shell (or Workbench's EXECUTE COMMAND):

```
ED S:Startup-sequence
```

These 'scripts' vary widely in content from disk to disk and with different Workbench revisions, so it would be inappropriate for me to try and explain any particular one in detail at this stage. I have covered Startup-sequences in the regular AmigaDOS column, but perhaps it is time I revisited them for newer readers. Look out for this in a future issue.

There are quite a few beginners' books around today. The cheapest is *Little Blue Workbench 2 Book* published by Kuma at £14.95. But four titles from the Bruce Smith Books fold might be more up your street: *Mastering Amiga Beginners* and *Mastering Amiga Workbench 2* cover the early days. *Mastering AmigaDOS 2* Volumes 1 (tutorial) and 2 (reference) will lead you through the more complex stuff – including Startup-sequences. You can get in touch with Bruce Smith Books on ☎ 0923 894355. ***MS***

DICONIX DRIVER



I have a Diconix 150+ printer, but it did not come with a printer driver. I rang Kodak, but was told the company could not supply one. Can you tell me where I can get hold of one?

Colin Smith
Brierfield
Lancs

There isn't a proper one, but JAM (☎ 0895 274449) has a 'hacked' EpsonX driver on its Printer Drivers disk that actually works much better with the Diconix 150 and 300 than EpsonX itself. ***JW***

LEGAL EAGLE

I plan to upgrade to Workbench 2.04 in the very near future. If I were to purchase just the Kickstart ROM (instead of the whole Enhancer pack), would it be legal to copy the Workbench disks from a friend or will I be infringing Commodore's copyright?

Some adverts claim that the Workbench 2.04 pack includes four disks – Workbench, Extras, Fonts and Install. What exactly does the Install disk contain?

I also plan to buy a 52Mb GVP hard disk for my A500. If I upgrade to 2.04, will it still autoboot under both 1.3 and 2.04? (I intend to buy a ROM switcher too). Does the drive automatically know which version of Workbench to use or will I only be able to autoboot under a single version of Workbench?

Tim Jelves
Countesthorpe
Leicester

Technically it is illegal to copy a friend's Workbench disks, although I doubt very much indeed that you'd receive a visit from the boys in blue. Although you may be tempted to simply buy a ROM chip, I really would advise you to buy the entire Enhancer pack yourself. The manual that comes with Workbench 2.04 is a vast improvement on the Workbench manuals of old, so it's worth spending the extra cash for this alone.

Four disks? Not as far as I'm aware. My Amiga B2000 only came with three Workbench 2.04 system disks – Workbench, Extras and Fonts – so I'm not quite sure where they got the extra disk from. It could be that they're using Workbench 2.0 disks from an early A3000. Because these machines used pre-2.04 versions of the operating system, they came with an Install disk which

JARGON BUSTING • JARGON BUSTING

ASCII – American Standard Code for Information Interchange. It is the data storage method commonly used when we type text files and enables data to be exchanged between different computers.

Kickstart – the most basic and central part of the Amiga's operating system. These days it is held in ROM, so that it is immediately present when the machine is switched on.

Printer driver – a program that sits inbetween any applications program producing output and the printer. It converts any codes describing text and graphics format into a form suitable for a specific printer.

Startup-sequence – a program which is executed every time the Amiga is switched on and after every reset. It sets up the system, and may be customised by those who have unusual hard or software requirements.

allowed the new operating system files to be installed onto a hard disk drive automatically.

The GVP Impact Series 2 drive (and indeed any autoboot-compatible hard drive) will autoboot fine under both Workbench 2.04 and Workbench 1.3. Unfortunately, getting a hard drive to boot up under the correct version of Workbench requires a fair bit of messing about with Startup-sequences and re-assignments. I've got a ROM switcher inside my machine too and all I've done is to copy a minimal amount of Workbench 1.3 system files to a directory called 'WB1.3'. When the drive boots up, the system checks which Kickstart version is installed using the 'Version' command and the Startup-sequence then executes the appropriate script file – there's one for 1.3 that re-assigns everything to the 1.3 Workbench files and another one which does the same for 2.04. ***JH***

THE SOUND OF SILENCE

My A1000's sound has died. I have checked for loose integrated circuits. All appeared OK. Is it possible that the chip responsible for sound is duff? If so, which chip needs replacing? I don't think it is the monitor that is a fault as it amplifies other input sources adequately. With the volume control on the monitor turned full up, there is barely an audible squeak from the computer. Any help and suggestions would be appreciated.

I also have a problem with my NEC P2200 printer. It is about 3.5 years old. Apart from the usual ribbons, and a new print head last year it has given no problems. However, over the last year or so I have noticed a distinct fading of print on the right hand side of the page particularly on graphics. I suspect my printer requires service and mechanical alignment. What do you think? If so, do you know of any authorised NEC service centres or have you a phone or fax number for NEC themselves in the UK?

A Bradley, Washingborough, Lincoln

The Paula chip is the one responsible for sound on the Amiga, but there are several other components the sound passes through on the way to the audio outputs, and any of these could have blown. Check out the Paula chip first, as it's easy to swap over.

NEC UK can be contacted on ☎ 081-993 8111 (London), ☎ 061-834 6824 (Manchester) or ☎ 021-631 3468 (Birmingham). ***JR***

GREEKS BEARING GIFTS

How do I get my Amstrad DMP-3160 printer and *Protext 5.52* to print Greek characters, as used in engineering science and maths?

I can get them to appear on the screen, but for some reason they will not print out. Should I use another printer driver, or should I change the printer?

P Todd
Swindon

The Greek characters are part of the IBM character set, so your DMP-3160 should first be switched to this mode – check your manual for DIP switch settings and the character set containing the Greek symbols, and set the switches accordingly.

If the DMP-3160 contains a standard IBM character set (which it probably does), then the Greek symbols will be characters 224 to 239 inclusive.

The trouble is that the Amiga's character set isn't IBM, and the Amiga characters from 224 to 239 are mainly foreign letters. But using the DMP-3160 in IBM mode, and the IBM 9-pin *Protext* printer driver, if you use these foreign characters on-screen they will print the standard Greek symbols in the IBM character set. The a-grave character on screen, for example, will print the Greek alpha symbol to the printer; a-acute will print beta.

The easiest way to get at these foreign characters is via the Text/Choose Character requester. The second from bottom row contains the characters in question. The far left symbol in that row (a-grave) is character 224, the far right character (i-umlaut) is character 239. Match these up with IBM characters 224-239 in your printer manual.

Using *Protext's* **SYMBOL** command it is possible to redefine the bitmaps (character matrix) of these characters so that they display the correct characters on screen as well as to the printer. Pages 190 and 191 of the *Protext* manual deal with the **SYMBOL** command.

Redefining character matrices is a bit of a 'techie' process: you have to learn about binary and hexadecimal numbers to start with, and it would take at least one long article to teach you how to do it. Perhaps that's something we can do another month – in the meantime there's a chap in Cornwall who has been redefining character sets for *Protext* like there's no tomorrow. He's currently got Greek, Croatian, Gost, Cyrillic, Russian, Turkish, Yugoslavian and Hungarian, and he's working on a whole bunch of others. His name is Graham Martin, and you can contact him at: 21 Dracaena Avenue, Falmouth, Cornwall TR11 2ER ☎ 0326 317287. ***JW***

PC TO AMIGA

My friend has got a PC and we are looking for a public domain program to transfer ASCII files so that we may exchange programs. Can this be done? I've heard of a program called *MessySID II* – could this be used? I live in Holland and I'm not sure how to order from UK PD libraries. Can I use a Eurocheque?

M Camporelli
Silvolde
Holland

MessySID will do exactly what you want and there are a number of other PC/Amiga file transfer utilities available as well (including programs like *MultiDOS,* and early versions of *CrossDOS,* which have been given away on various magazine disks). All PD libraries carry these types of utilities and, if you do chose to order from UK sources, Eurocheque payments will be fine. ***PAO***

DON'T STOP NOW!

a) I am currently customising my copy of Workbench. So far I have set it up to display a *DPaint* screen using the display utility and I want to get it to play an *OctaMed* tune. I can get it to play the tune after *Display* has closed, but is there any way I can get the two programs to run at the same time?

b) If I bought a 2Mb RAM expansion would I be able to make longer animations in *DPaint 3?* Would such an expansion be Chip or Fast RAM?

Alistair Metcalfe
Balerno
Edinburgh

a) This should be quite simple to fix, because the Amiga is capable of running many programs at once. You should just use the **RUN** command from AmigaDOS to start them – like this:

```
RUN <NIL: >NIL: Display ...
RUN <NIL: >NIL: MEDPlayer ...
```

(put your filenames and options after the **Display** and **MEDPlayer** commands, as usual).

The additional **<NIL: >NIL:** will allow the initial Shell window to close when the Startup-sequence completes. This is not absolutely necessary for every command but it won't do any harm. However, this sort of multi-tasking can cause problems as two commands try to load things from disk at the same time – you'll notice this as a lot of additional disk 'grinding'. A better solution is to make **WAIT** resident early in the script and make AmigaDOS wait between commands:

```
RESIDENT C:WAIT
RUN <NIL: >NIL: Display ...
WAIT 5 secs
RUN <NIL: >NIL: MEDPlayer ...
WAIT 5 secs
```

You will have to experiment with the exact timing of these commands – but this will improve the efficiency of the boot sequence considerably.

b) Yes – the more memory you have the better. A 2Mb RAM expansion on any A500 machine will be Fast memory only. ***MS***

RUSSIAN OUTLINES

Is there a Russian font available in Compugraphic format which I can use with *Professional Page 2.1?* And is there a high quality program that will convert bitmap fonts into Compugraphic outline fonts? Lastly, is the *Font Manager* program that comes with *Professional Page 3* the same as the one that comes with *Professional Draw 3?*

Vileyn Lul
Brussels
Belgium

Not that I know of; not that I know of; and exactly the same, in that order. But there must be an Adobe Type 1 Russian typeface out there somewhere. If you can find it, you can use *Font Manager* to convert it to Compugraphic format. I recommend you contact dealers who sell Adobe Type 1 fonts and keep asking. ***JW***

MEMORY MATTERS

I own an A500 with 1Mb of memory which I purchased 6 months ago. The problem that I have concerns the memory.

a) Is the 1Mb of memory that I have split into half a megabyte of Chip RAM and half a megabyte of Fast RAM or is it all Chip RAM?

b) If I purchase a GVP hard drive with 2Mb of RAM, what would the total amount of Chip and Fast RAM be in my machine?

c) Is there a PD program available that will tell me what chip set I have inside my Amiga? I would rather buy a program than rip my machine apart.

P Ashworth
Fareham
Hants

a) Having checked out the information you supplied, it seems to me that your machine is equipped with half a megabyte of Chip RAM and a half megabyte of Fast RAM.

b) If you purchase a GVP drive with 2Mb installed, you'll still have half a megabyte of Chip RAM but 2.5Mb of Fast RAM. It seems likely, however, that your machine is equipped with the ECS Agnus chip. If this is the case, then it would be perfectly possible to have the board modified by a Commodore-approved service centre to give a full megabyte of Chip RAM.

c) There sure is! What you need is a copy of the PD program *SysInfo* written by Nic Wilson. *SysInfo* will tell you everything you need to know about the internals of your machine plus a lot more than you'll probably ever need to know. It's available on Fred Fish disk 642 which can be obtained from just about every PD supplier, and also appeared on last month's *Amiga Shopper Shareware Collection* cover disk. ***JH***

MIDI PLUS?

I have had my A500 for seven months and have recently upgraded to an A1500 Plus. Since I've kept my old machine I wondered whether it would be possible to use it as a MIDI instrument when my A1500+ is running programs like *OctaMED?*

Simon Ouzman
Upper Norwood
London

There are plenty of programs including *OctaMED* that can play a sampled sound voice when they receive MIDI data. All you need to do is to link the two machines via two MIDI interfaces and arrange for the A1500+ to send MIDI data to the A500 as well as playing its own internal sounds. ***PAO***

A501 ANY GOOD?

I'm thinking of upgrading my A500 to about 3Mb. I already have a very old A501 upgrade which is bound to be too slow to use as Chip RAM. If I upgrade to a Fat Agnus would I be able to use the memory in the new expansion as more Chip RAM or would I have to change my A501 to a more modern clone?

Phil Poole
Downend
Bristol

Try it and see. Some older A501 clones don't work too well as Chip RAM, but I've not had problems with genuine CBM A501s, even old ones. If you have problems with the machine crashing after you have configured for 1Mb chip ram, then buy a replacement card – they're very cheap now. ***JR***

RANDOM RESETTING

My computer seems to reset itself after being on for anything from five minutes to four hours. I don't get any warning – the screen turns grey and it reboots. I have removed everything and checked my disks for viruses – but they are all clean. What now?

Paul Chapman, Stanley, Co Durham

Errm, it's broken. The most likely cause of this is a power glitch – if the machine is overheating the time would be more consistent and it would probably stay off until it had cooled down. I will hazard a guess that the fault is a loose connection or cracked board where the PSU (Power Supply Unit) plug enters the case – I've repaired several A500s with similar faults. Try wobbling the PSU lead around a little and see if that causes the machine to reset. Also, try leaving the machine on, but unattended for a couple of hours. If you boot a disk first, and remove it before you leave, you'll be able to see if the machine has reset. If all else fails, get the machine serviced by a Commodore accredited dealer. ***MS***

SWEDISH LIST

a) Why do Compugraphic fonts come out better on both *Professional Page* and *PageStream* using non-PostScript dot-matrix printers than standard PostScript fonts?

b) How can I create a PostScript output file from a document making use of Compugraphic fonts?

c) Why is the data transfer from the Amiga to any non-PostScript printer so terribly slow? It can be up to five minutes transfer time for an A4 page in PageStream, even with a 68030 processor.

d) Is Power Computing's colour hand scanner any good?

Per Swantesson
Umea
Sweden

a) The 'hints' contained within the definition of Compugraphic typefaces are used when output to dot-matrix printers, whereas the hints for PostScript fonts are created by the PostScript device itself, so are not used when output to non-PostScript printers. This should only make a difference to point sizes under about 10pt, though this will depend on the design of the typeface.

b) In *Professional Page's* Output PostScript requester, click on the Downloadable Fonts button before 'printing' your PostScript file. For this to work the PostScript font definition for each font in the document (except those found in standard PostScript devices) needs to be in the CGFonts:PS directory. This '.psfont' file can be generated from the Compugraphic data by the *CreateFont* program that is supplied with Gold Disk's Compugraphic fonts packs, or from the Adobe Type 1 data by the *Font Manager* program supplied with *Professional Page 3* and *ProDraw 3*.

c) Simply because it takes the program that long to generate the bitmap that has to be sent to the printer, for the printer device to pass all that data to the printer, and the printer to actually print the data. A 68030 processor will only speed up the printing process significantly if you have some 32-bit memory as well, but otherwise the speed increase is negligible (only about 25-30 per cent quicker).

d) I don't know. Every time I phone Power Computing and ask about it they say "Ready in two weeks". If and when it is ever released, we will review it. ***JW***

MAGAZINE MAYHEM

I have an A500 Plus with two drives and I write disk magazines containing articles and programs using Echos in the Startup-sequence and Aliases so that only a number has to be typed to load a program. I would like to make the whole thing more professional, and so I would appreciate your answers to the following questions.

a) How can I display an IFF picture as a menu (preferably in DOS) and access the programs by pressing function keys (in a similar manner to that of the coverdisks on the front of your sister magazine, *Amiga Power*)?

b) How do I create my own System-configuration containing a custom pointer and screen colours for use on my own boot-disks?

c) I am thinking of saving up for the Power Computing hand scanner and I would like to know how the level of light within a particular room will effect the quality of scans.

Darren Kemp
Leeds
West Yorkshire

a) All you need is a PD program called *MagPages* which is available on Fred Fish disk 684. It allows you to create interactive multimedia-like front ends for disk magazines that combine graphics and text within the same screen.

b) If you're creating a disk magazine that can also be run on a 1.3-based Amiga, then you really need to get your hands on a copy of the 1.3 *Preferences* program (you'll find this on a *DPaint* program disk or similar). Simply set up the colours and pointer that you want, save the settings off to disk and then copy the file called System-configuration in the DEVS: directory across into the DEVS directory of your disk magazine.

c) Hand scanners don't need external lighting to scan an image, so it's perfectly possible to scan an image in complete darkness. Hand scanners produce their own high intensity light which is directed at the image being scanned. ***JH***

RETIRING BOOK

I would like to program the Amiga in machine code for games and have been trying to get a copy of the Abacus *Amiga Systems Programmers Guide* but it is out of print. Any ideas on where I can get a copy?

Michael Addison
Cannock
Stafford

No, I've tried quite a few of the larger book suppliers without success and the only other thing I can suggest is to try a classified advert, either in *Amiga Shopper* or one of the magazines that specialise in private user ads (such as *Micro Computer Mart*). ***PAO***

HARD DISK RECOVERY

I use a Dataflyer SCSI Interface and 52Mb Quantum Hard Drive on an Amiga 1500. In a distracted moment while trying to initialise a disk on DF0:, I accidentally double clicked on the DH0: icon and said yes to format and almost immediately stopped the initialisation process by switching the power off. The screen message at the time was "verifying ...".

This act seems to have erased some or all of the files and the DH0: icon has disappeared from the screen. I have had to use a Mountlist and the Mount command to re-identify the drive to the system as DH0: The cd dh0: and dir dh0: commands return the message "Not a DOS disk". On switching on I have to wait while it attempts to boot from the hard drive and defaults to df1: Can you please let me know of a suitable utility, preferably PD

and/or other means (or some code, C, or assembler) of recovering or unerasing the files.

Harold Wicks
Hemel Hempstead
Herts

Unfortunately I think it's too late to get any files back from your Dataflyer. The Dataflyer uses a non-standard disk format which many disk repair programs won't understand, and your only option now is to reformat the drive.

You may want to try some public domain utilities like *DiskSalv*, or even the dreaded Commodore *DiskDoctor* that is (was?) in your C directory. You haven't got much to lose if they don't work. ***JR***

PRINTING GRAPHICS



My printer, the Citizen Swift 9, prints words perfectly, but I am puzzled as to how to print graphics, particularly from *Deluxe Paint*. I have studied the manual to no avail. Can you please give me a step-by-step layman's guide to the printing of graphics?

Mervyn Lee
Calcot
Berks

Load the picture into *Deluxe Paint*. Select Print from the Picture menu. Click on the Print button. What could be simpler? If you are having a particular printing problem, Mervyn, then you'll have to be a lot more specific about the problem. ***JW***

HARD PROBLEMS



My hard disk was formatted using the Nexus software and partitioned into system 2.0 (3.5Mb) and work (96 5Mb). The disk works correctly at boot up and programs can be run from it. However, when running *HDToolbox* from the 2.0 install disk an error message "Driver not installed" is displayed. How is it possible to use this software with my hard disk?

MJL Enoch
Southport
Merseyside

Simple. Select *HDToolbox*, choose INFORMATION from the workbench menu, select NEW tool type, type in:

```
SCSI_DEVICE_NAME=NEXUS.DEVICE
```

press return, click on SAVE, and then double-click *HDToolbox* to run.

Owners of other SCSI cards can use the excellent Commodore software in exactly the same way by substituting their own device driver name for NEXUS.DEVICE in the line above, as follows:

● A590/A2091/A3000 – No line is needed; it will work with these controllers automatically

● All GVP controllers –
```
SCSI_DEVICE_NAME=gvpscsi.device
```

● Microbotics Hardframe –
```
SCSI_DEVICE_NAME=hardframe ↲
.device
```

● ICD 2000/2080 –
```
SCSI_DEVICE_NAME=icddisk ↲
.device
```

● IVS Trumpcard –
```
SCSI_DEVICE_NAME=ivs_scsi ↲
.device
```

● Supra –
```
SCSI_DEVICE_NAME=supradirect ↲
.device
```

Owners of other controllers should look in their manuals to find the right device name. ***JR***

SPECTRUM UPGRADE



I am considering buying an Amiga but I am having some difficulty in finding the basic information I need written in simple English. I presently own a Spectrum +2. If I was to buy an Amiga with a PD Spectrum Emulator, will I still be able to run all of my cassette-based Spectrum games? Also, where can I find an idiot's guide that will help my to decide which packages to buy?

K Matthews
Glenburn
Paisley

As far as I'm aware, the PD Spectrum emulator runs the vast majority of Spectrum games without problems. You will, however, have to buy a sound sampler if you wish to load games from cassette. Don't worry about the cost, though – sound samplers can be bought for little more than £20 these days (you could check out MicroDeal's new *Rave Sampler*, for example).

As for the idiot's guide, why not check out Phil South's book *Mastering Amiga Beginners* which is available most good book stockists. It's packed with everything you need to know to get started with the Amiga and covers a wide variety of different applications including music, graphics, comms and programming. Another good read is *Amiga Shopper* of course – every month we bring you possibly the most comprehensive (and certainly the most authoritative) coverage of what's going on in the Amiga marketplace. ***JH***

OH, 1.2 IS ME



My Amiga system is an all-in-one business pack purchased shortly after the A500 was introduced. It now consists of 1.2 Kickstart and Workbench, 1Mb RAM, monitor, printer, second disk drive and my most recent acquisition, a GVP HD8+.

I use my Amiga mainly in my work as an insurance agent with *Scribble* and *Superbase*. Can you sort out the following for me:

a) As I cannot boot from hard drive with Workbench 1.2 (most ads suggest 1.3) what do I need on my boot floppy?

b) Is it worth upgrading to Workbench 1.3 or Workbench 2? I am happy and familiar with my existing system and I don't want to open the machine. If I do upgrade, do I just need to change the Kickstart chip or will I have to change other chips too? It seems you have forgotten that Workbench 1.2 users still exist! How soon will it be before you assume everyone has upgraded to Workbench 2? And what are the benefits of having Workbench 2, if any?

c) Some of the letters in *Amiga Answers* suggest that people have both 1.3 and 2.04 Workbench on their hard drive – I would like to know why this is necessary.

d) What is the best printer driver for my Citizen LSP-110?

e) I have all the Workbench 2 disks supplied with the A600. Why doesn't *HDBackup* work?

Mr CP Parker
Reading
Berks

a) The software supplied with the GVP should have been able to perform this task for you. Although I have used a GVP, I have never encountered it on a Kickstart 1.2 machine, so I can be of little help to you here. Basically, since the hard drive will 'automount', all you need is a standard workbench floppy with a special Startup-sequence and a properly-configured hard disk. Since you are using Workbench 1.2, you'll need to 'activate' the CLI first using the *Preferences* program. Assuming your GVP mounts as DH0, copy the original Workbench from floppy with this command:

```
COPY SYS: DH0: all
```

Now edit the Startup-sequence on a copy (yes, a copy) of your boot floppy, so it looks like this:

```
ASSIGN SYS: DH0:
ASSIGN DEVS: SYS:Devs
ASSIGN LIBS: SYS:Libs
ASSIGN L: SYS:L
ASSIGN FONTS: SYS:Fonts
ASSIGN S: SYS:S
ASSIGN C: SYS:C
EXECUTE S:Startup-sequence
```

You'll have to do this from the CLI using the following command:

```
ED S:Startup-sequence
```

Before you do that though, you should read through the answer to the next question.

b) So many questions – so little room. The answer is progress – we don't naturally assume that everyone has upgraded to Workbench 2 or Workbench 1.3, but, to be fair, a lot of people have. Workbench 1.3 is an entirely software-based upgrade, and makes a lot of improvements to the system as a whole – although you'll only notice some of these if you also upgrade to Kickstart 1.3 – and this will mean opening the machine and changing a ROM. However, the first thing you'll notice is the machine will instantly boot from hard disk!

The GVP is very fast and your machine will become a lot more usable. The main Workbench (the menus and screen colours and such) does not change with Kickstart 1.3 so you could still use the Workbench 1.2 disk set. Upgrading to Kickstart 2.04 is a much better option, although I suspect this will need some minor surgery on the board. You will not have to change any other

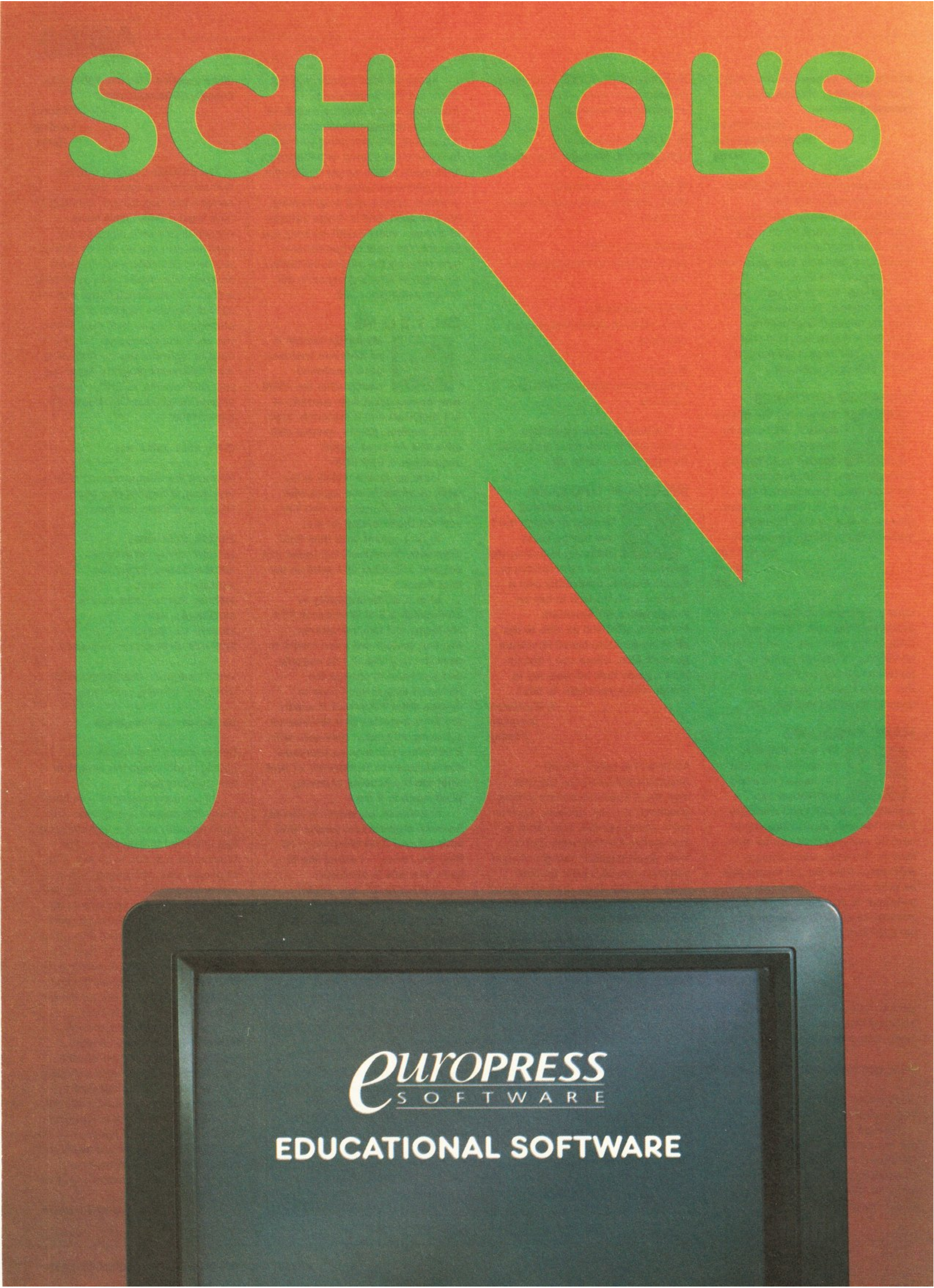
continued on page 40

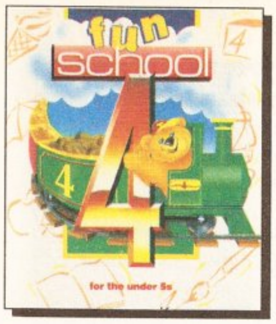
JARGON BUSTING • JARGON BUSTING

Compugraphic fonts – rather than a simple bit-mapped image of each character, which grows more jagged with magnification, a Compugraphic font represents the shape of each character within the font as a mathematical equation, so that as the magnitude of the character is varied in printing the result always looks smooth.

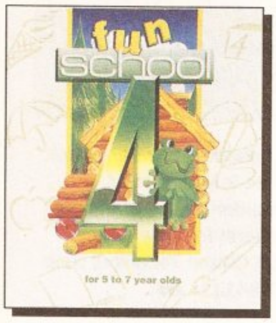
Chip RAM – the area of the Amiga's memory directly accessible by the custom graphics and sound chips. The larger the quantity of Chip RAM available, the larger the sound samples that can be played, and the larger and smoother the animations and graphics screens that can be displayed. Currently the maximum possible Chip RAM is 2Mb.

MIDI – Musical Instrument Digital Interface is a standard devised by electronic instrument manufacturers, allowing a number of synthesisers to be controlled by a single keyboard or sequencer.

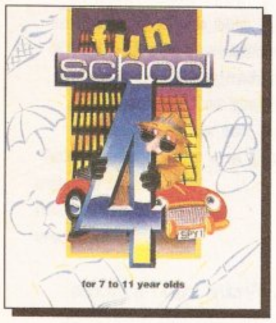

SCHOOL'S
IN
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SOFTWARE
EDUCATIONAL SOFTWARE



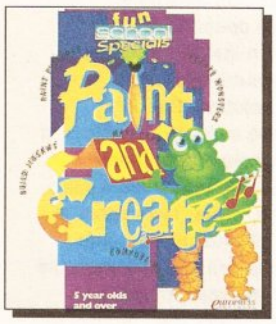
FUN SCHOOL 4
For the under 5's.



FUN SCHOOL 4
For 5 to 7 year olds.



FUN SCHOOL 4
For 7 to 11 year olds.



FUN SCHOOL SPECIALS
Paint and Create.
5 year olds and over.



FUN SCHOOL SPECIALS
Merlin's Maths.
For 7 to 11 year olds.

Parents of the world, rejoice.

Your child might soon by dashing home from school to reach not for the latest megakiller computer game, but for their homework.

It's no dream, thanks to Europress educational software.

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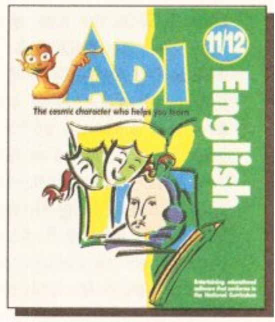
CREATIVE EDUCATION

Europress Software, Europa House, Adington Park, Macclesfield, SK10 4NP.

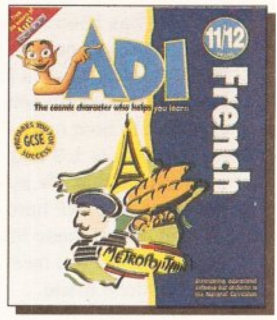
TEL: Technical/Admin: 0625 859333. FAX: 0625 879962.



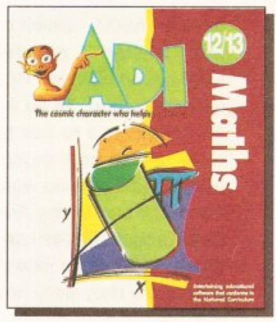
FUN SCHOOL SPECIALS
Spelling Fair.
For 7 to 13 year olds.



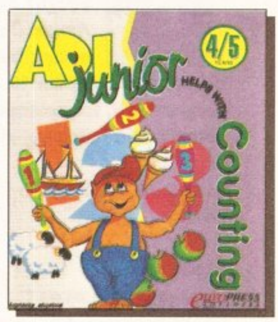
ADI ENGLISH
For 11 to 15 year olds.



ADI FRENCH
For 11 to 15 year olds.



ADI MATHS
For 11 to 15 year olds.



ADI JUNIOR COUNTING
For 4 to 7 year olds.

continued from page 37

chips unless you really want to, although again, this is something worth considering if you are having the machine opened up in any case. Either way, it is better to have these upgrades completed by a competent repair outfit – and make sure you check the costs first.

With Kickstart 2 and a complete Workbench 2.1, your machine will not only look but also feel different; and Kickstart 2 is noticeably faster than 1.3. By the way, a lot of books still cover AmigaDOS 1.2 and 1.3. *Mastering AmigaDOS 2*, for instance, covers all versions of AmigaDOS from 1.2 currently up to 2.04 and will shortly be updated to AmigaDOS 3. The *Little Red Workbench Book* also covers specifically AmigaDOS 1.3 and Workbench 1.3. As far as magazines are concerned, although I cannot speak for individual editors, I would guess that few people will assume 1.3 dead for some time yet – the majority of ROM-based Amigas in the world are still running it.

c) It rather depends on how the machine has been configured. Some people do this because they have a ROM sharer – that's a little gadget which allows you to select which Kickstart to boot from. The best compromise is 1.3 and 2.04 – both of which support the auto-booting facility of your GVP hard drive. You can get one of these fitted to the machine while you have the other modifications made...

d) No idea. Try EpsonXOld or EpsonX[CBM_MPS1250]. Unless of course anyone out there has any better suggestions...

e) Probably because you don't have an A600 – which comes fitted with Kickstart 2, and therefore, the ROM-based libraries *HDBackup* expects to find. To be frank, I have only had cause to use the program twice and on both those occasions I wish I hadn't. If you want a decent hard disk backup try *AmiBack* or *Quarterback*. By the way, copying those A600 disks infringes copyright – because they were not supplied with, or for, your machine. ***MS***

COMPILE TRIALS



I have recently bought *Mastering Amiga C* and am having trouble using the *NorthC* compiler to compile my programs. If, for example, I try to compile the following program:

```
#include <stdio.h>
main()
{
float area;
area=circle_area(10.0);
printf("%s%f\n","area is ↵
",area);
}
float circle_area(float ↵
radius)
{
float product;
product=3.14*radius*radius;
return(product);
}
```

I get these sort of error messages:

df1:problem.c line 11 Error expect)
df1:problem.c line 17 Error expect }

Please help because these function problems are becoming a pain!

Richard Bagshaw
Hucknall
Nottingham

Printed examples in *Mastering Amiga C* are coded in ANSI C, which is the new style C supported by all major compilers. The differences between this form and the older K&R style (that *NorthC* expects) are dealt with in the 'compiler' notes that are present on the disk which accompanies the book There was not enough space on the disk to put both K&R and ANSI C example forms, so users of K&R style compilers have to make some code alterations. These again are outlined in the compiler notes disk document.

As far as your above example is concerned you need to alter the initial lines of the function definition, and then declare the function as returning a float value. This modified form will compile under *NorthC* without error:

```
#include <stdio.h>
main()
{
float area;
float circle_area();
/* K&R style declaration */
area=circle_area(10.0);
printf("%s%f\n","area is ↵
",area);
}
float circle_area(radius)
float radius;
/* old K&R style definition */
{
float product;
product=3.14*radius*radius;
return(product);
}
```

PAO

PRIVILEGED USER



I own an A500 Plus with 2Mb of Chip RAM and one internal drive. I am considering the purchase of a 52Mb GVP Series 2 hard drive. All the members of my family use my machine in one way or another, so I was wondering whether there is a piece of software available (PD or commercial) that will assign access rights to individual users. For example, only I would be allowed to delete files.

Without blowing my own trumpet, I am the only member of our family who understands how the machine works, so my mum or dad could quite easily delete something important without realising it. This kind of protection could easily be achieved using a user ID or a password. At college our PCs are running on a Novell network which gives users rights such as reading files, writing files, and altering software setups, by using ID codes. Is this possible on the Amiga?

David Wright
Preston
Lancashire

To be perfectly honest, this sort of thing isn't really possible simply because the Amiga is a personal computer and not a network file server. You can of course buy networking systems for the Amiga that will give you the same facilities as the Novell systems that you mention, but there's little point in doing so unless you want to run several Amigas from a single hard disk. The nearest that you'll get to such protection is to use the AmigaDOS Shell command **Protect** to protect certain files from deletion. Sorry I couldn't be of more help. ***JH***

CITIZEN MSP TROUBLE



I have a Citizen MSP-10e printer and no matter what I try I can't get it to work. All I get is the message "Check printer and cable". Please could you tell me the correct printer driver to use, and the DIP switch settings?

J M Pritchard
Gosport
Hants

The MPS-10e emulates the Epson FX-80 or an IBM 'graphics' printer. For best results on the Amiga you need to have it in Epson mode, and you should use any of the EpsonX drivers (not EpsonQ). The DIP switch settings will be in your printer manual. If you don't have a manual or cannot understand how to set them, contact Citizen Technical Help on ☎ 0753 584111. ***JW***

LOCKED OUT!



I use my hard disk drive for serious work but I often need to use disks from other people's machines. I use the LOCK command in AmigaDOS to prevent anything writing to the hard disk, but this does not survive a soft reset. Is there any way around this?

Jim Carden
Kirkintilloch
Glasgow

Yes and no. Firstly, don't assume that if you have LOCKed a partition using AmigaDOS, a virus will not be able to penetrate it: this is untrue. A clever file virus will see the lock and bypass AmigaDOS altogether.

You could open the drive and splice a switch into the write line – but that's a brutal and highly inadvisable solution. The only solution I have seen in software is in Kickstart 2 where a boot menu makes it possible to dismount your auto-mounted drives. Then again, a clever virus may just make some electronic inquiries and still trash the hard disk. If you really must use other people's disks then remove the hard drive from the machine and forget about it. OK, it may sound a bit severe – but it works. ***MS***

BARE NECESSITIES



I read about the C language but do not know how to start writing the listings. Do I have to use special software that handles C programs or can I just use the *ED* program that comes with the Amiga? How do I save the programs, and how do I run them?

Frank Bowman
St Lucia
Malta

JARGON BUSTING • JARGON BUSTING

Basic – Beginners' All-purpose Symbolic Instruction Code is a high-level programming language, much favoured by micro-computer users. It combines a fair amount of power with ease-of-use.

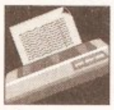
C – a compiled language designed primarily for systems programming. It was used to write much of the Amiga's operating system, and is used in the writing of many Amiga applications.

Compiler – a means of translating a program to render it understandable to the computer. A compiler translates the whole thing into machine code before it is run. The compiled program is generally much faster than its interpreted counterpart.

Font – the group of letters, numbers and special characters that comprise one variation of typeface, for example: 12pt Times, 12pt Times Bold.

The C programs that you see in the pages of magazines represent listings from ordinary text files, in other words, files that are created with programs like *ED* or some other text editor. These files are called 'source code files' and you create and save them in just the same way as you create any other type of text file. Unfortunately, a number of additional steps are needed to convert these files into runnable C programs. Firstly, a piece of software called a C compiler needs to be used to translate the program lines into low level machine code instructions which the Amiga can understand. Secondly this latter 'object code' has to undergo a process known as 'linking' which produces the final runnable program. There's a lot more to the story but all introductory C books will outline the steps, and their purposes, in some detail. ***PAO***

DUMPING FROM DMP



I have an Amstrad DMP-3160 printer and would like to use it with *Deluxe Paint III*, but as you can see from the enclosed printout, all I get is garbage. I bought the printer without a manual. Which printer driver should I use?

I am getting a colour printer. Which 24-pin one gives the best output in the £200 price range?

Also, how does *Deluxe Paint III* delete a file with no Trashcan?

John Gaskell
Crosby
Liverpool

The DMP-3160 is an Epson compatible 9-pin printer, so you should use the EpsonX or EpsonXOld driver. Try both and see which works best. The printer's DIP switches should be set to Epson mode. If you've no manual you will need to contact Amstrad (☎ 071-836 6801) and ask the technical people there for advice.

Currently you cannot buy a colour 24-pin printer for £200, they all cost closer to £300.

I don't understand your last question. If you mean "how come *Deluxe Paint* can delete a file when there isn't a Trashcan on the disk?", this is because dropping icons into the Trashcan doesn't actually delete anything – the Trashcan is just a special type of directory that doesn't get 'emptied' until you select Empty Trash from the Workbench Icons menu, at which point everything in the Trashcan gets deleted from the disk. Until then you can open the Trashcan (by double clicking on it) and retrieve stuff.

When you select Delete from the *Deluxe Paint* Picture menu it doesn't put the selected file in the Trashcan, it deletes it from the disk. Just like using the AmigaDOS Delete command, the file will be gone for ever, so make sure you really want to delete it before saying Yes. ***JW***

A1000 UPGRADES



We have recently returned to this country, bringing with us an elderly A1000 – one of the first to reach Papua New Guinea via Australia. It still works fine (despite the climate change!) but is limited to running smaller/older programs because it only has 512K RAM. We would therefore like to upgrade the machine by adding some extra RAM and a hard drive. Would the cost be justified now that the A1000 is slipping below the innovation line, eclipsed by the A600, 1500, 2000 and such like?

Richard Dryden
Dawlish
Devon

Believe it or not, but the A1000's bus connector (you'll find it hidden behind a plastic cover on the right hand side of the machine) is actually fully compatible with the bus connector on the A500. You can therefore connect just about any hard drive or RAM expansion designed for the A500 to the A1000 through this connector without any modifications. Up until recently, I owned an A1000 myself (until someone burgled my house and stole the damned thing!) which was expanded to 8.5Mb using a standard A500 RAM expansion. ***JH***

A QUESTION OF ROYALTY



I am going to write a program to sell commercially using compiled Basic. Do I have to pay royalties or acknowledge the use of HiSoft Basic or AMOS? If I make the distribution disk into a self-booting disk including WorkBench do I have to pay royalties or make acknowledgment to Commodore.

DJP Fielder, Whitehaven, Cumbria

Both Hisoft and Europress Software have told me that there are no licence/royalty fees required when writing compiled Basic/AMOS programs for commercial sale. You should however include a suitable acknowledgement. It may even be a good idea to let to let them see your product because, if it is good, they may offer to buy and/or distribute it on your behalf!

Commodore licensing and acknowledgement conditions can vary. You should write to CATS (Commodore Amiga Technical Support) outlining the files you wish to use and they'll explain what must be done. ***PAO***

COPY? WHAT'S COPY?



Having recognised the excellence of the Compugraphic typefaces that came with my *PageSetter II*, I bought George Thompson Services' *Compugraphic Type Fonts Volume 1* – three disks containing 37 typefaces in all.

But on reading the information for importing the typefaces into *PageSetter II*, I was baffled as to what to do. The directions read: "Copy the .lib, .metric and .atc files for each font that you wish to install into your CGFonts directory. They will now be available for use in your documents."

As a novice with computers I am at a loss as to exactly how to copy these files into my font directory. I'm not even sure how to get into my font directory in the first place. It is certainly not immediately obvious from any of my Workbench or *PageSetter* manuals.

Adrian Wood
Loughborough
Leics

OK, you're working with two floppy disk drives, so we'll set-up *PageSetter II* with this in mind. First, boot from your copy of Workbench as normal (not the original disk that came with the Amiga, always work from a backup copy!) and initialise (or "format" as we more usually call it) a new floppy disk, giving it the name CGFONTS.

Use your external drive to format the CGFONTS disk. If you don't know how to do this, Chapter 4 of your Amiga 500 manual has a section which deals with Initialising and Renaming disks.

The disk you have just formatted is the one on which you are going to keep your Compugraphic fonts. You may want to have a whole library of these CGFONTS disks, but for the moment we'll stick with one.

Now remove the CGFONTS disk and put the GTS *CG Type Fonts #1* disk in the drive (its actual name is CGFONTS_1). If you've read the Contents and Info files on this disk you'll know that there are several typefaces on it, each of which comprises several files stored in a directory that has the same name as the font.

So, let's copy the Albatross typeface on to our CGFONTS disk.

Open your Workbench disk window, or in other words double click on the Workbench disk icon. You should see an icon called Shell appear in that window. Double click the Shell icon and another window will open. This is a window into which we can type AmigaDOS commands.

Type the following command into the Shell window, not forgetting to press the [Return] key at the end of the line:

```
COPY CGFONTS_1:ALBATRO ↵
SS/ALBATROSS.ATC TO CGFONTS:
```

Don't type the '↵' – this is to show where a command line has gone over the width of the magazine column. The character between S and 1 in CGFONTS_1 is called an underscore. You type it by holding down the Shift key and pressing the minus sign key (the one between the number zero and the equals sign). Note also the colons after the disk names, or 'volumes' as the Amiga calls them.

The part of that command line that reads **CGFONTS_1:ALBATROSS /ALBATROSS.ATC** is the name of the file that is to be copied, preceded by the 'path' to the file – you can read it as "the file to be copied is on a disk called CGFONTS_1 in a drawer (or directory, another name for the same thing) called ALBATROSS, and the name of the file is ALBATROSS.ATC".

The disk name (the volume) is always followed by a colon; directory names are followed by slashes (the one on the question mark key).

The Workbench disk will whirr a bit while the Copy command is loaded, then the CGFONTS_1 disk will whirr while the ALBATROSS.ATC file is copied into memory. The Amiga will next ask you to place the volume (the disk) called CGFONTS in any drive. So remove the CGFONTS_1 disk from the external drive and put the CGFONTS disk that we prepared earlier into it. Don't worry about clicking the Continue button in the requester that has appeared, the Amiga will automatically notice that the correct disk is now in the drive, provided it is called CGFONTS.

The CGFONTS disk will whirr for a while as the ALBATROSS.ATC file gets transferred from memory on to the CGFONTS disk.

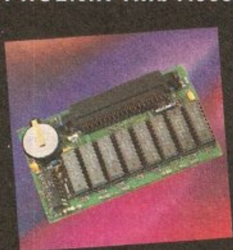
If the requester asking for CGFONTS remains on the screen after disk activity has finished, it means that you haven't named the disk CGFONTS – check for leading or trailing space characters, and delete them if you find any. It's either that or you've somehow typed the command incorrectly.

continued on page 44

TRAIL BLAZERS-WHAT'S NEW IN NOVEMBER 1992!

In this month's pre-christmas "TRAIL BLAZERS," we focus on some of the best products and peripherals currently on release for the Amiga.

PHOENIX 1Mb A600 UPGRADE



Simply the Best !

£44.99

ROCTEC ROCLITE

This famous super slim drive has now been upgraded to include Anti-click and virus checker - We have reluctantly had to raise the price of this product due to the variance of the dollar rate. However to soften the blow we will include a FREE disk head cleaner worth £3.99

Phoenix price..........£64.99

VORTEX 'GOLDEN GATE'

Designed for the Amiga 1500/2000/3000 and 3000T this is a 25MHz 80386SX PC/AT Emulator. PC/AT slot support-Max 16 Mb PC/RAM, 4Mb for Amiga-Will use PC/AT IDE Hard Disk and floppy disk drives 2.88 Mb under Amiga DOS, highly recommended.

Phoenix price.........£419.99

FINAL COPY-UK VERSION

This powerful, unique WYSIWYG word processing package is the best value choice for your Amiga, sharing many of the features of full-blown DTP packages

Phoenix price.........£69.99

Be safe in the knowledge that you are buying the official UK version of the product from Phoenix. *BEWARE of dealers offering "Latest version" of Final Copy. This may be American product and should not be sold in the UK!*

AMOS PROFESSIONAL

The most eagerly awaited software package of the year, has just received an award of 97% in CU AMIGA. Francois Lionet's superb creation has now evolved to include numerous new features developed from Amiga users ideas and feedback. Don't miss this six disk Bonanza!

Phoenix price £44.99

OPAL VISION

Amazing new 24-Bit graphics card and video system for the Amiga 1500, 2000 and 3000. Includes software suite worth hundreds of pound. With an incredible performance, this is simply awesome.

Phoenix price.......£739.99

PHOENIX PRODUCTS

Mouse/Joystick Switch.................£13.99
Don't damage your Amiga's ports! This device saves wear and tear makes switchover *FAST*, and does **NOT** require power unlike many others.

Computer/Video Scart Switch....£19.99
Flip between Video/computer signals at the push of a button.

Phoenix Stereo speakers..... NEW! £29.99
Superb sound and excellent dynamics. These two-way stereo Hi-Fi speakers are an Amiga standard-**Excellent companions on any gaming soiree!**

DISK DRIVES 3.5"

All drives feature super slim design, enable-disable switch, thru port and come with a **1 year replacement guarantee!**

Phoenix Deluxe Drive..........................£47.99
Roctec Roclite..................... NEW! £64.99
This famous drive has now been upgraded to include Anticlick and Virus Checker
Disk head cleaner..............................£3.99

FREE FAST UK DELIVERY

NEXT-DAY COURIER ONLY £4.50

MUSIC — AMIGA MUSIC

Attention all you music lovers! Phoenix have kept this unbeatable music deal running for you throughout the Christmas period.

MUSIC-X Jnr....only £15.00
When purchasing either a Phoenix Stereo Sampler or Pro Midi 2 Interface
Please Note: this is a limited offer only while stocks last!

Stereo Sampler......... NOW ONLY £29.99
Combines ease of use with state of the art analogue to digital conversion technology.(inc. FREE sample editing software +audio lead)

Pro-Midi 2 Interface....................£24.99
This fully featured professional quality midi interface is very flexible giving semi-patch bay facilities. It has five ports in, out, thru and two switchable out/thru. (inc. FREE midi lead)

GVP Digital Sound Studio...........£54.99
High quality sound sampler for all Amiga Computers
Amiga Music Made Easy-Only from Phoenix!

A 570 CD ROM

This essential add-on has finally arrived, suitable for A500/A500+, A570.

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Heavy duty construction,rubber edging, perfect colour match, makes an ideal workstation for the A500/A500+ **A 600 control centre now available.**

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PHOENIX

A1200 NEW
AMIGA 1200

Probably the home computer of the decade, the A1200 is the latest addition to the Amiga family. Incorporating a new internal engine and many more exciting and powerful features, this machine truly takes the Amiga family into the next generation!!!!!!!!!

FEATURES INCLUDE:

68020 Processor Running at 14 Mhz • 2Mb Chip RAM (expandable to 10 Mb using 4Mb fast memory PC MCIA cards and 4 Mb 32-bit RAM in CPU slot) • New double "AA" graphics chip set • 256 colours on screen from a 16.8 million colour palette • Full Amiga Key board (with Alpha numeric key pad) • CPU local BUS slot, (card edge).

Phoenix Price Only £379.99

A 600 NEW PACKS

'THE WILD, THE WEIRD & THE WICKED'

1 Mb A 600 as standard and includes the excellent value Software titles: Deluxe Paint III • Formula One Grand Prix • Putty • Pushover

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1 Mb A 600 as standard and includes **20MB HARD DRIVE** the excellent value Software titles: Deluxe Paint III • Trivial Pursuit • Epic • Myth • Rome

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A 600 2Mb+20 Mb Hard Drive £524.99
(both include the above detailed software)



The stand-alone A 600 is compact, semi portable, fully featured and can be purchased in the following configurations:

- A 600 .... £274.99
- A 600 HD ..... NOW ONLY £429.99
- A 600 2Mb £314.99
- A 600 HD 2Mb £469.99

A 600 RAM EXPANSION

- Phoenix PA 601-populated-1Mb.....£44.99
- Phoenix PA 601-unpopulated-0Mb...£24.99
- Phoenix A 600 ROM Sharer...........£29.99

Keyboard switchable!

A 4000 AMIGA 4000

Features Include: 68040 32 Bit Processor running at 25 MHz (upgradable) • New Double AA chipset with 16.8 million colours • high density 1.44 Mb floppy • 120 Nb IDE hard drive • New Workbench 3

AMIGA 4000.................... £2,229.00

A 4000 with 40/240/425 Mb Hard Drive.......**£POA**

1500 AMIGA 1500

2.04 Workbench Includes: Deluxe Paint 3, Platinum Works, Home Accounts, Toki, Puzznic, x Elf, Amiga Format Book and Joystick

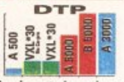
AMIGA 1500............... ONLY £539.99

A 500 EMULATORS

- GVP PC-286 16MHz......................£239.99
- KCS Powerboard (with DOS 4.01)......£199.99
- KCS Powerboard £184.99
- KCS adaptor for 1500/2000... ONLY £59.99
- Vortex A Tonce Plus 286 (16MHz)...£214.99

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- A5000 + 3MB 16.67 Mhz £319.99
- A5000 + 4MB 16.67 Mhz £349.99
- B5000 + 1MB 25.00 Mhz £499.99
- B5000 + 2MB 25.00 Mhz £669.99
- B5000 + 3MB 25.00 Mhz £829.99
- B5000 + 4MB 25.00 Mhz £979.99

A 500 HARD DRIVES

GVP IMPACT SERIES II Hard Drives, the fastest Hard Drive/Controller for the Amiga. Features Game Switch, external SCSI port, FAAASTROM SCSI Driver, GVP's custom VLSI chip and internal RAM expansion up to 8 meg! Units use high specification fast-access QUANTUM Hard Drives coming with **2 yr. guarantee.**

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DRIVES ROCTEC

SALE OF THE CENTURY!!

Phoenix in association with Roctec and Conner, continue to achieve massive sales on this high specification, quality product. Due to the buying power of Phoenix we are able to maintain these incredible prices-prices that have left the competition **GREEN** with envy-and the Amiga buying public licking their lips. **Stocks will only last until the end of November.**

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Featuring Connor drives-very fast access times-(19ms or better) • expand up to 8 Mb using 1 Mb Simms only • 1 year guarantee • slimline design ideally colour matched to the A500 • Own power supply.

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EXTRA MEMORY-Only £25.99 per Mb.

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GVP Combination Accelerators & Hard Drives-The ultimate expansion product for the Amiga 500!

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- A530 68882 Co-Processor.............................£204.99

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- GVP G-Force 030-40MHz + 4Mb................£784.99
- GVP G-Force 030-50MHz + 4Mb..............£1099.99

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- 4Mb Simm-32 Bit 60 Nanoseconds.......£182.99

EMULATORS PC 1500/2000-3000/3000T

Vortex 'GOLDEN GATE' NEW! £419.99

This emulator is the ultimate bridge between PC/AT platforms and the Amiga. If you think this is for you, cross to page three for specification details in this months 'Trail Blazers' section!

PRINTERS IMAGE

STAR

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9 PIN colour printer with paper parking, eight fonts and electronic DIP switches.

LC24-100 .... NEW! £189.99

24 PIN with compressed data mode, 16 K buffer and 10 letter quality fonts,(with Star printer driver only).

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- LC-200 Colour...£195.99
- LC24-20..£199.99
- LC24-200 Mono £219.99
- LC24-200 Colour..£268.99
- XB24-200 Colour..£379.99
- SJ48 Bubblejet .... NOW ONLY £219.99

Star printers come with one year warranty.

CITIZEN

- Swift 240 Colour................. NEW! £279.99
- Swift 240 Mono................... NEW! £259.99
- Swift 200 Colour................. NEW! £219.99
- Swift 200 Mono................... NEW! £199.99
- Swift 9 Colour............... SPECIAL OFFER £179.99

Citizen printers come with 2 year warranty.

HEWLETT PACKARD

Deskjet-550C *(colour printer)*.... **NEW! £559.99**

300 dpi laser quality output • sharp blacks and 16 million colours available • six built in type faces-4 scalable • improved media handling • several paper sizes • **FOUR TIMES FASTER** than previous H.P. Deskjet range.

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HP printers come with 3 year warranty.

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- HP colour ink cartridge £29.99

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- STAR LC200...£59.99
- STAR LC24-200..£62.99
- STAR LC24-20...£62.99
- STAR SJ48...£49.99

JET BUBBLE JET

CANON BJ 10eX.............. NEW! £224.99

Upgraded version of BJ10e, the worlds biggest selling portable inkjet printer.

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More Features than the BJ10, includes Auto sheet feeder. Top selling-Highly Recommended

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80 column bubblejet provides laser quality output.

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136 column bubblejet.

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SILICON CHIPS

AMIGA CUSTOM CHIPS

- Kickstart 2.04 ROM...£34.99
- Kickstart 1.3 ROM....£27.99
- Fatter Agnus 8372A..£34.99
- NEW Super Denise.£29.99
- CIA 8520A...................£9.99

MEMORY CHIPS

- 4 Mb x 9 (-70) Simm....£99.99
- 1 Mb x 4 (-80) Zip.....*£34.99
- 1 Mb x 9 (-80) Simm...£27.99
- 256k x 4 (-80) Zip......*£29.99
- 256k x 9 (-80) Simm...£12.99
- 1 Mb x 1 DRAM...........£3.49
- 256k x 4 DRAM............£3.49

*This price is for 1 Mb of RAM

These chips cover practically every popular memory expansion or Hard Drive system on the market for the Amiga ie. GVP, SUPRA, MICROBOTICS, COMMODORE

> *"I must write to congratulate you on the efficiency of your mail order staff."*
> **Robert S. Blair ~ Denmark**

X-PAND MEMORY EXPANSION

SUPRA 500RX the ultimate in Fast Ram expansion units. *(*Uses 256x4 Zips)*

- 8 Mb pop to 1 Mb*.....................................£99.99
- 8 Mb pop to 2 Mb*...................................£124.99
- 8 Mb pop to 2 Mb......................................£149.99
- 8 Mb pop to 4 Mb......................................£209.99
- 8 Mb pop to 8 Mb £309.99

VISION MONITORS

PHILIPS 8833Mk II......... ONLY £194.99

Colour Stereo Monitor now including **'Lotus Turbo Challenge'**, and 1 years on-site warranty.

- **COMMODORE 1085 SDI £216.99**
- **COMMODORE 1084 SDI..........£199.99**

All monitors are supplied with a FREE cable for connection to your Amiga.

MONITOR ACCESSORIES-

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- 14" Tilt & Swivel stand..........................£13.99
- Anti-Glare filter screen..........................£19.99
- A4 Copy Holder.......................................£12.99

> *"This is is the second time I have dealt with you and each time have had excellent service and rapid delivery"*
> **Peter W. Beaumont~ Huddersfield**

DISKS MEDIA

Don't confuse these quality disks with others currently available. 3.5" 100% certified error free 70% clip. All disks include **FREE** high quality Phoenix labels.

- 10......................£4.99
- 25....................£12.99
- 50....................£22.99
- 100..................£39.99
- 200..................£72.99
- 500................£174.99
- 750................£259.99
- 1000..............£339.99

TDK Branded disks- High performance media from the experts-box 10 with labels.

- 10......................£5.99
- 50....................£26.99
- 100..................£52.99
- 500................£249.99

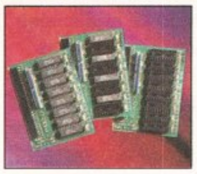
1000 Phoenix Disk Labels..................£9.99

WIRE LEADS & CABLES

- Midi-Midi 2m....£3.99
- Midi-Midi 3m....£4.99
- Midi-Midi 5m....£5.99
- Disk Drive ext....£9.99
- Modulator ext.....£9.99
- Amiga-Scart.........£9.99
- Amiga-8833MkII..£9.99
- Joystick long ext..£4.99
- Mouse/Joystick ext...£4.99
- Mouse/Joystick splitter...................................£4.99
- *Serial/Modem cables......................................£9.99
- *Amiga-Multisync...................................from£9.99
- *Amiga-Microvitec..£9.99
- *Amiga-CPC monitor..£9.99
- *Amiga-RGB/TV..£9.99
- *SCSI Cable various £9.99
- Printer 1.8m........£5.99
- Printer 2.0m HQ....£7.99

***For full details of these cables or information regarding the right cable for the job call 0532-311684. Custom built leads are no problem Phoenix.**

A 500+ PHOENIX 2 Meg RAM Upgrade Modules



A PHOENIX RAM module can expand your chip RAM up to 2 Mb by using the trapdoor expansion port. Extra RAM is necessary to unleash the incredible graphics capabilities of your Amiga. All our boards carry a full 2 year no quibble replacement guarantee. **It's never been cheaper to upgrade!**

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1 Mb unpopulated RAM board.........£16.99

VIDEO MULTI-MEDIA

Rombo's Vidi Amiga 12 is the replacement for their complete colour solution bringing you the world's first mass market colour digitiser for **under £100.**

VIDI-AMIGA 12 .... ONLY £79.99

Outstanding features and plenty of **VFM!**-*(Value for money!)*-Highly Recommended.

ROCGEN Plus £129.99

Quality features and performance-Recommended.

ROCKEY BY ROCTEC

The new chroma key unit - used in conjunction with a Genlock - allows you to superimpose live video over graphics or video-substitute the brightness portion of a video source with a keyed image-Embed live video in graphics!

Phoenix Price.......................£269.99

continued from page 41

Now you need to copy the ALBATROSS.LIB and ALBATROSS.METRIC files from the CGFONTS_1 disk to the CGFONTS disk in exactly the same way.

When all three files have been copied on to CGFONTS, that's the complete Albatross typeface copied. Now repeat the process for any other typefaces you want to use.
You might also want to copy the typefaces from the *PageSetter II* Fonts & Utilities disk on to your new CGFONTS disk:

```
COPY PSUTIL:CGFONTS/T#? ↵
TO CGFONTS:
```

The **#?** is a wildcard sequence. That command will copy all files whose names begin with the letter T from PSUTIL:CGFONTS/ onto the CGFONTS disk.

I doubt very much whether you'll get more than about eight Compugraphic typefaces on one floppy disk, so for this first CGFONTS disk, copy the ones that you definitely know you want to use now rather than the ones you think you might want to use later.

When *PageSetter II* is run it will look for bitmap fonts in a directory called FONTS on whatever disk you booted from, and it'll look for Compugraphic typefaces in a 'logical device' called CGFONTS: (with a colon on the end). Don't let the term 'logical device' spook you – for the moment all you need to know is that the names of disks are treated the same way as logical device names. So our disk called CGFONTS, when placed in a drive, effectively becomes the CGFONTS: device. If it finds CGFONTS: *PageSetter II* looks to see what Compugraphic typefaces are available there, remembers them, and then opens its own screen for you to start work.

Have you spotted the flaw in the system? Once *PageSetter II* has looked in CGFONTS: and remembered what typefaces are there, these are the only typefaces available during this work session – or to put it another way, you can't stick another disk with more typefaces on it in a drive and use those. All the typefaces you want to use during your DTP session must be in CGFONTS: at the time when you run *PageSetter II*.

With a hard drive you'd bung all your CG typefaces in one massive directory and use the Assign command to make this directory the CGFONTS: logical device. No problemo – all the typefaces you own are available. But with floppies you need to build a collection of CGFONT disks that contain different typefaces for different types of work.

There's one more disk you need to prepare, called CGCACHE. This disk will store bitmap representations of any CG characters you use so that they don't have to be calculated every time you type them. Working from floppies the time saved isn't so great, but it certainly cuts memory usage. So format a disk and call it CGCACHE. At certain times the Amiga may put a requester on the screen asking for this disk to be placed in any drive. Simply do as you are asked.

And this is the way I would run *PageSetter II* on a dual floppy drive Amiga: I'd boot from my working copy of Workbench, not from the *PageSetter II* disk. Then I'd remove Workbench and put the *PageSetter II* disk in the internal drive, and my CGFONTS disk in the external drive. I'd run *PageSetter II* by double clicking on its icon, and when it had finished loading I would remove the *PageSetter II* disk and put my CGCACHE disk in that drive.

No doubt the Amiga will ask me for the *PageSetter II* disk back at some time, and maybe even the Workbench disk. At which point I'd oblige. And I'd have a few blank disks by my side, ready formatted, onto which I would save my *PageSetter II* documents. Eventually I'd get sick of swapping disks and buy a third and perhaps a fourth floppy drive, or I'd start saving up for a hard drive.

Finally, Adrian, I recommend you buy yourself one or two books on using the Amiga. Unless you read and read and read, and then experiment with your computer, you are most likely destined to remain a novice for ever. ***JW***

MACRO MANIA



I have recently brought *Devpac 3* which is brilliant but I'm trying to use the Abacus *Amiga Machine Language* book which uses three *Assempro* assembler-specific macros:

```
ILBEL Assempro:includes/amiga.i
INIT_AMIGA
EXIT_AMIGA
```

I don't know what these macros mean and would be grateful if you could print them in your mag.

Gareth Stoyle
Earls Barton
Northants

I have never used the *Assempro* assembler and although I've asked around not one *Assempro* user has been found. I suspect that somewhere in the book, or on the disk which accompanies it, you will, however, find the necessary details. All I can say is that if anyone out there in *Amiga Shopperland* has already found this information I'll gladly pass it on through the power of these pages! ***PAO***

MIND YOUR OWN BUSINESS



I am thinking of starting up my own business and naturally wish to use my Amiga for all my computing needs. Most business software reviewed in magazines tends to be word processing, database or spreadsheets. I would be grateful if you could tell me of any other software available. I need software to handle accounts such as cash books, VAT, plus stock control and invoicing. I already know about the Digita range (although I've never seem them reviewed), but I would be grateful if you could mention a few more.

Scott Hughes, Toxteth, Liverpool

What an admirable pursuit, Scott! If only more people thought like you there would be more on offer – unfortunately there isn't much and even less I can recommend. There used to be a couple of business and accounting programs but at least one has gone to the wall and I wouldn't dare mention the other. Digita's accounting stuff doesn't look up to much (being a port from 8-bit machines) but it does the job. Its later offerings such as *System 3* and *System 3e* are far better, although nothing like as pleasant to use as *Wordworth* or *Home Accounts 2*. I'd like to see Digita and others upgrade some of this software – but only time and a lot more people like you will encourage them to do it: such is supply and demand. Or, put another way, why supply something there is no demand for? ***MS***

TROUBLED WALTERS



I've recently bought a second-hand 9-pin printer. It has no manufacturer's name on the front, but it has Shinwa written inside it and takes Shinwa CP80 multistrike ribbons. On the back is written Walters Microsystems International Model WM100. I was told on enquiring that this company has since gone into liquidation.

So I have no way to get a manual and don't know how to set the DIP switches. I have got it printing in graphics and text with the EpsonXOld printer driver, but with no italics.

Could you please tell me where I can find some more information on this printer?

CE Saul
Middlesbrough
Cleveland

I don't know, sigh, the things I do for you guys. And you didn't even bother to send me a Christmas card.

I've been on the trail of Walters for some months now, ever since I got a letter about help with a 'Walters 2000' printer. First, the bad news is that the company did indeed go into liquidation, some two years ago now.

The good news is that I've found somewhere where you can get manuals. The name of the firm is P&B Computers and the phone number is ☎ 0494 441288. They can supply you with manuals for the WM80, WM100 and WM2000 models, plus ribbons for those three and a few others. ***JW***

MEDDLESOME CRASH



I'm running *OctaMED Pro* version 3.00 on a standard 1500 (WB1.3) and it has crashed up to four times in one hour. I have the same problem with *MED* on both my A500 and my A1500. Would having more Chip or Fast memory solve the problem?

Chrys Richardson
Bolingey
Cornwall

It's happening on both machines so it does look as though *OctaMED* and *MED*, rather than your Amigas, are somehow to blame. Having said that I've not encountered any such problems nor heard of any other users having frequent crashes when using these programs. My guess is that your troubles are somehow related to what you are actually doing and you really do need to identify the cause of the problem before doing anything rash (like going out and buying more memory). Try a few experiments to see if the crashes occur only when you are working with many instruments, or with large samples or complex songs.

I'd also suggest that you jot down the Guru meditation numbers that appear when the machines go down and send them to AmigaNuts United with details of exactly what you were doing at the time – that will almost certainly enable them to identify the cause of the problem and suggest a remedy! ***PAO***

THE BIG FIELD



I am compiling a database for my video library but am unable to find a database with a suitable field length. One three-hour video tape may contain as many as 500 short

clips which I need to enter into the field. Can you suggest a database which will fulfil my needs – I need one which supports a very large field length. I have tried a lot of the PD and Shareware offerings, but none seems able to fit the bill.

Philip Nolan
Sutton Coldfield
West Midlands

I can imagine that one created a few smirks with database experts. This problem is not easy to crack with flat-file databases – the type you've been using – because of the way they work. What you need is not an unlimited length field, but a database which can relate two files: a relational database. One which contains a list of clips according to video and another which has the video codes. I covered something similar in *Amiga Shopper* Issue 13 (May 1992) using *Superbase Personal* which is so cheap they'll be giving it away with cornflakes soon. You could probably adapt the model to *Order 2.1* (by South Hams Software) too. ***MS***

SHOT IN THE DARK



The colour graphics quality on my Citizen Swift 9 printer, which I bought on the strength of the review in issue 4 of *Amiga Shopper*, is appaling.

Overall the colours are too dark, but blue is the worst. In *Deluxe Paint IV*, *PageStream 2.2* and *IntroCAD*, royal blue (100 per cent blue, zero red and green) has too much red and black in it, so it comes out very dark purple, even at low densities. Using *PageStream*, where it shows the actual colour in the colour palette, the printed colour looks nothing like it.

I use the EpsonX driver for *PageStream*, EpsonX[CBM_MPS-1250] with *Deluxe Paint IV*, and Epson-JX80 for *IntroCAD*. I put it down to a driver problem as none of these are specially written for the Citizen Swift 9.

Is there a better driver, and where can I get it from?

Colin Heyes
St Helens
Merseyside

Like most of the current 9-pin colour dot-matrix printers, the Citizen Swift 9 emulates the Epson FX-850. The best Amiga preferences driver to use for this emulation is called Star9Plus (it was written for the Star LC-200) and can be found on a printer driver disk supplied by *Just Amiga Monthly* (☎ 0895 274449).

However the solution isn't that simple. What you really need is the power to correct the colours. Workbench Printer Preferences has a very basic colour correction feature, but by selecting the R, G and B colour correction buttons you should enhance the output slightly. A better way would be to use something like *Citizen Print Manager* or *Turboprint Professional*, which will give you greater control over colour output. Neither of these programs works well with *PageStream*, but they work fine with *Deluxe Paint III* and *IV*. I've not seen *IntroCAD*, but if it uses standard Amiga preferences printer drivers then it should work with these two handy programs. ***JW***

TALKING DRUMS



I am trying to use *Music X* to program in drum pattern sequences using my MIDI keyboard but is there any way of inputting the data in a graphical drum versus bar-position grid type format? I remember in your MIDI articles that you mentioned a way of making the notes snap into the right place. Would this help?

Steve Balazy
Henlow
Beds

It's not possible to use *Music X* to create drum patterns in the way that you describe but you can easily tidy up the timing of drum parts entered via your MIDI keyboard by quantising the track data. Read the section about the quantise module in the *Music X* manual and all should become clear. ***PAO***

A FILE TOO BIG



In my ignorance I crammed a disk full of data – about 300 typewritten paragraphs. When I try to edit my work I can only get a very short way before the machine locks. I realise this is a low memory fault but is there any way I can split the text into three parts and then access those separately? I don't want to have to re-type all the text again.

Bob Janes
Newton Abbot
Devon

First of all, you are not ignorant – we all make mistakes from time to time and I've done worse things than that, like unrecoverably formatting the wrong hard disk at low-level and losing 40Mb-odd of data and programs! Go on, have a good chortle about that – then we'll see if your problem can be remedied.

OK, first off, *Transwrite* (which you say you're using) is not meant for humungous blocks of text. If you want to write a large tome, write it in chapters or, better still, treat yourself to a word processor that can handle text from disk. *Protext 5.5* is an excellent example – and probably the only one comparable to *Transwrite*. In the meantime the only solution I can offer is via AmigaDOS. (I'd prefer to handle a problem such as this with ARexx, but that's only supplied with Workbench 2.)

First of all, make a copy of your text file and put the original somewhere safe. If you had the icons turned on you can do this from Workbench, otherwise it's a bit more tricky. If you have a DOS utility like *SID* or *Directory Opus* use that and jump to Step 7. If all else fails try the following batch of instructions:

1. Boot from your Workbench disk and open a Shell.

2. Format a blank disk (in your external drive). Any disk will do, provided it's already blank.

3. Enter the following:

```
RESIDENT C:COPY
RESIDENT C:DIR
RESIDENT C:CD
```

4. Now, put the disk with the file you want to recover in the external drive and enter this:

DIR DF1:

This will call up a list of the files and directories on the disk. If your text is in a drawer called TEXTS, this will be listed as:

```
TEXTS (dir)
```

5. If you can see the file you want to recover, go to Step 6 now. If not, enter this:

```
CD DF1:
CD TEXTS
DIR
```

If you can see the file now, proceed to Step 5. If not, and the file is stored in another directory, repeat the last two commands, for instance:

```
CD Chapters
DIR
```

Keep on like this until you find the file you want.

6. Put a blank disk in the internal drive and enter the following command to copy your file onto it (replace the XXXX with the name of the file you're copying):

```
COPY DF1:XXXX TO DF0:BIG
```

7. That completes the process. You should now have a copy of the original file on a blank disk. Make sure that disk is in DF0: and replace Workbench in the external drive. Open a Shell (if you haven't already done so). Now is where things gets a little tricky...

8. Enter the following command:

```
EDIT DF0:BIG TO DF0:Part1
```

EDIT is a line editor which will prompt you with a colon (:). Enter the following list of commands carefully, pressing [Return] at the end of each line, just as if you were still using normal AmigaDOS:

```
200n
0(d;)
Q
```

That preserves the first 200 lines of your file and stores them as a file called Part1 which you should be able to access with *Transwrite*.

9. Enter EDIT again with a command line like this:

```
EDIT DF0:BIG TO DF0:Part2
```

The next step is very similar to what we did before, but differs slightly because you need to delete the first 200 lines, keep the next 200 and finally delete the rest:

```
200d
200n
0(d;)
Q
```

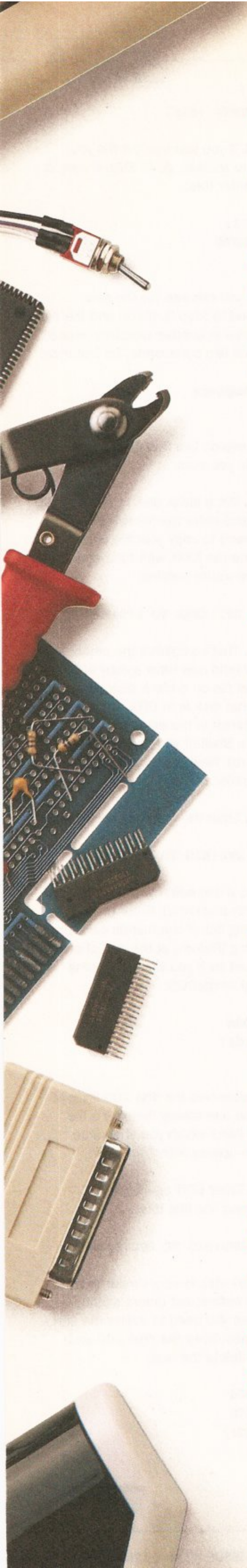
continued on page 48

JARGON BUSTING • JARGON BUSTING

Assembler – a program which converts an assembly language program written in words (well, almost) into the machine code numbers that the Amiga's 68000 processor understands. Writing programs in assembly language ensures that the best possible speed and memory efficiency is gained from the machine.

Database – an program that enables information to be stored and retrieved in a structured manner. Information can be grouped according to a user's preference, and retrieved according to user-specified criteria.

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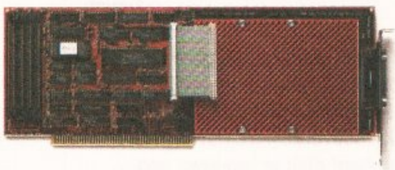
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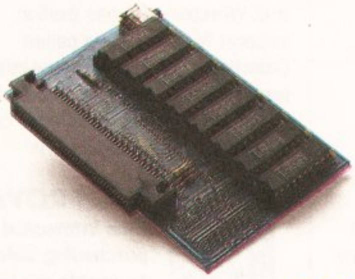
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continued from page 45

10. Repeat Step 9 using 'Part3' as the destination filename, and the following set of commands:

```
400d
200n
0(d;)
Q
```

Note the value in the first line increases by 200 each time. Keep on doing this until you have divided the original file into small enough segments to work with.

If, after trying all that you're still completely confused, drop me a copy of the original file and an SAE c/o *Amiga Shopper* and I'll do it for you, as soon as I can. But please, do try it yourself first – that is the only way to learn. ***MS***

CITIZEN MIFFED



Having very little technical knowledge, and having recently bought *Wordworth 1.1*, I was somewhat disappointed to learn that I could not print text in colour via a Citizen Swift 24 printer.

Your excellent magazine reports on the new Workbench 2, which does deal with coloured text, and as I have the 1.3 version I thought upgrading would be the ideal solution. Until I saw the price.

All I really want are the new disks, and I am assuming that the ROM and Chip RAM upgrade will not be necessary as I already have 2.5Mb. Can these disks be obtained without buying the whole deal?

SW Waldron
Newport
Gwent

There is absolutely no point in upgrading to Workbench 2 without upgrading to Kickstart 2 as well. Workbench 2 requires Kickstart 2. You can still get away with just 512k of Chip RAM, but 1Mb is better.

But this is neither here nor there because your problem has nothing at all to do with versions of Workbench and Kickstart. Of course you can print text in colour from *Wordworth 1.1*, providing your Swift 24 has the colour kit fitted and you have the correct printer driver selected (read your Wordworth manual). I think you are getting confused with the fact that Workbench 2 has built-in support for something called ColorFonts, which are many-coloured fonts instead of single coloured ones. But this has nothing to do with actually printing colours. ***JW***

CHORUS OF APPROVAL



I am interested in purchasing software to enable me to play in up to eight part choral music with piano accompaniment, to edit, add lyrics, and produce a printed copy to reasonably professional standards. I've seen an Atari running *Notator* software which seems to do what I want. Is there anything similar that I can use on my Amiga?

S Hall
Burgess Hill
West Sussex

Although not as good as Notator there is a heavyweight DTP version of Dr T's *Copyist* program available which is designed for this sort of work. *Copyist DTP* itself costs £229 but there are a couple of other cheaper versions of the program which might just suit your needs. The best thing to do is to see the programs in action and if you contact Zone Distribution on ☎ 071-738-5444 to make suitable visiting arrangements, they've said that they'll be able to show you the programs in action. ***PAO***

LCD SCREEN SCENE



I am considering the purchase of an A600 to enable me to operate and learn different types of software in my travels, rather than just at home. Before I purchase the A600 though, I'd like to know whether Commodore plans to produce a version of the A600 with a full colour fold down LCD screen in the very near future. At the moment, I would have to lug a portable television around with me if I bought the existing A600.

R Anscombe
Basingstoke
Hants

Colour LCD screens are still very expensive, Mr Anscombe, so it seems unlikely that an Amiga portable sporting a colour LCD screen will be appearing within the coming months. I'm sure Commodore do plan to launch a portable Amiga eventually, but both the timing and the machine's pricing have to be right. Commodore's move towards surface mounted technology and the new CMOS-based 'AGA' custom chips do seem to suggest that the company is preparing its technology for easy inclusion within a portable machine, but that doesn't necessarily mean that a portable will be launched. Like all things Commodore, we mere minions can only sit back and wait with baited breath... ***JH***

INTERFACE THE FACTS



I have decided to take the plunge and buy an A1200, but first I would like to clarify a few points.

a) Although the CPU is only a 68020, the chances are I would like to upgrade. Would a new CPU simply fit in the socket, or would a card be required? Approximately how much would this cost?

b) Is there any possibility of replacing the IDE interface with a SCSI? How much faster is SCSI and would the internal HD be able to work with it?

c) How compatible is AmigaDos 3 and the new AGA chipset with the A500/600?

d) When a high-density drive eventually filters through, will it just be a matter of opening the case and swapping drives?

Graeme Herdman
Low Fell
Gateshead

a) You cannot simply replace the 68020 with another CPU. Most of the chips on the A1200 motherboard are surface mounted, and not in sockets. The 68020 found in the A1200 is a very compact version of the chip, about the size of a postage stamp, and more powerful chips such as the 68030 would not have the same pin connections and are unlikely even to be the same size. Fortunately the trapdoor port on the bottom of the A1200 is especially designed to take processor expansion cards. These are planned by Commodore, although they, and the prices for them, are not yet available. I would guess that a 68030 would be not much more than £200. Third party manufacturers such as GVP will probably be extremely quick off the mark as well. I wouldn't expect you'd have to wait longer than four months for the first cards to start appearing.

b) No. You couldn't simply take one out and replace it with another. IDE drive interfaces are not as advanced as SCSI, and are much cheaper to manufacture. The catch is that they require much more processor time in order to work. SCSI, on the other hand, is lightning quick if implemented properly and requires very little in the way of processor usage. The catch with SCSI is that it, and the drives, are more expensive than their slower and less-advanced IDE counterparts. You could, however, add a SCSI interface to the A1200 at a later date and then fit external SCSI drives if you wished to.

c) Very compatible with everything except games. The vast majority of modern (1992 onwards) games for the Amiga will work with the new chipset and operating system. Older games are much less likely to work. Applications software, such as DTP, art, word-processing, utilities and so forth are almost guaranteed to work. If you are unsure, take your most important software down to a dealer and try it out before buying.

d) Yes, when Commodore make the high density drives available separately then you will be able to swap them over. ***TS***

SMEAR CAMPAIGN



I have a Commodore MPS-1270A inkjet printer, with which I use the HP92261A ink cartridges.

When printing onto listing paper I have to wait up to 20 minutes for the ink to dry. When I use photocopier paper it is dry almost instantly. Could you please tell me if there is a quick drying ink cartridge for my printer?

Also, can I use the same printer cable I use on the Amiga with my PC and the Commodore printer?

M Barker
Bransholme
E Yorks

No, you can't buy a quick drying ink cartridge because individual models of inkjet printers require certain types of ink to be used. But you can buy proper inkjet paper, which is covered in a fine layer of chalk so that the ink dries instantly upon

JARGON BUSTING • JARGON BUSTING

Accelerator board – a device which either includes a central processor like the Amiga's, or a more advanced one in the same range, but operating at a higher speed. An accelerator is useful for calculation-intensive applications, such as 3D rendering.

Genlock – a way of slaving one video source (usually that produced by an Amiga) to another (for example video tape or a camcorder) in order to synchronise their signals to allow stable wipes, mixes and other effects including overlay between the two sources.

Sample – a digital – computerised – representation of a sound. A sample can be sent through a digital to analogue converter (the Amiga has four of these) and be heard as sound. Different frequencies (or pitches) of the sound can be obtained by varying the speed at which the sample is played back.

contact with the paper. Any good stationers will be able to help you, but be prepared to pay quite a lot more than for ordinary photocopier paper. And fanfold inkjet paper (what I think you mean by 'listing' paper) tends to cost twice the price of cut sheet inkjet paper.

In answer to your second question, yes. ***JW***

FLYING HIGH

I have been involved in video production for a few years on a semi-professional basis and have recently made the decision to upgrade substantially to a new 'industrial' S-VHS edit suite from Panasonic – AG7750 and AG7650 machines with AGA800 edit controller, MX50 production mixer and such like.

In the past I have incorporated an A500 Plus and G2 VC1 genlock into the system for captions and graphics and I would like to continue using an Amiga in the upgraded environment. Which raises the question "How far do I wish to take the machine?" In essence I would like to have an Amiga which complements the capabilities of the new system.

This obviously means installing extra memory and a hard drive. Would the A530 from GVP be the obvious choice?

In order to run such programs as *Scala MM200* in conjunction with a 24-bit graphics card such as OpalVision, for instance, how much memory – both Fast and Chip RAM – would you recommend? Is the MegaChip 2000/500 the wisest choice here?

Is it true to say that 'Productivity' mode is the ideal mode for graphics-oriented work (as opposed to Hi-res/Super Hi-Res)? If so, are the ECS chips that are required already installed in the A500 Plus or would they need to be purchased separately? Incidentally, I plan to use an NEC 4F1G monitor.

As my intention is to create as automated a system configuration as possible I would also like to utilise the Amiga for data storage and retrieval (in other words, Edit Decision Lists – EDL). Panasonic told me that such applications only exist on MS-DOS systems. Is this true, or could you recommend an application for the Amiga? The AGA800 edit controller has an RS232 25 pin sub-D connector.

Finally, and perhaps most importantly, will the A500 Plus, with all the attendant upgrades and expansions, be sufficiently well specified to take full advantage of the above-mentioned applications and software or will an Amiga 3000 be required from the outset?

To sum up, can an A500 Plus be expanded to exceed the Amiga 3000 in spec or is there still an intrinsic difference between the two machines in terms of ultimate expandability?

Nick Carter
St Julian's
Malta

I think that you would be far better off considering one of the new A4000 machines. With its new graphics modes, hard drive, fast processor, 2Mb of chip memory, built-in flicker fixing and other features, you are in the perfect position of being able to take one giant leap forward and not have to worry at all about what you are leaving behind in terms of incompatible peripherals.

You could even hold off on the Opalvision and use HAM8 mode until the time was right. *Scala MM200* works with the AA chip set, and a modified *Deluxe Paint* should be available as you read this. The only thing you might consider adding immediately is more memory, though a standard A4000 ships with 2Mb Chip and 4Mb Fast RAM, so you might be happy with that anyway – I know OpalVision certainly will, though whether it works properly in a 4000 I have yet to hear.

Put your A500 Plus aside for word processing, games and offline graphics – there really isn't much point spending money on it now that you can buy a new machine which seems so fitted to your needs for less than it would cost to add all the extras to your current A500 Plus – and then some.

Even if the A4000 had not been released, I would have said that you should look at an A3000 instead of trying to expand the A500 Plus – especially since the OpalVision has not yet been announced as an external version.

By the way, Productivity mode only has four colours maximum, so I'd forget it for video work.

As for EDL software, Panasonic are almost correct. MicroIllusions produced an Amiga program called *EDLP* (Edit Decision List Processor) which lets you set up your edit list (with one video and two audio channels) and then communicate with a suitable edit controller via the Amiga's serial port.

I'm assured that it will work fine with the Panasonic AGA800 which you propose buying. *EDLP* is still available and can be obtained from The Software Business, Cromwell Business Centre, New Road, St Ives, Huntingdon, Cambs PE17 4BG (in the UK) for £299.99 (which sounds rather expensive, but compare it to other systems and you'll realise what a bargain it really is). ***GW***

MYSTERY ILLNESS

I would be grateful for your advice. I bought my A1500 with KickStart 2.04 six months ago with a Phillips monitor as a package deal. With the monitor I got *F19 Stealth Fighter.* Unfortunately this does not work with my computer. The disk lights stayed on for around seven seconds and the screen went dead. After numerous disk exchanges, I still have had no luck.

I have tried these disks on a 1.3 A1500 and they worked fine. Could my problem be that the Kickstart is incompatible with these disks? Is there a way to load from the Shell?

Also, is there any truth in the 'Amiga Disease', in other words: if the monitor is placed over the Amiga, it can cause a similar problem?

Mr A Burgon, Brecks, Rotherham

I'm afraid that your problem is Kickstart related, and the product is not working correctly under 2.04. As far as the Amiga Disease goes, this is definitely a new one! No, there is no truth in it. The only problem you could have is by stacking disks next to the monitor speakers, in which case you will experience disk faults and unreliability. ***TS***

TOWER POWER

I am trying to find out more information about a product produced by Inovatronics called the Hi-Q Tower. Do you know of any complaints from users concerning this product? Would I be able to merge an A500 with Progressive Peripherals' Zeus Accelerator or GVP's Combo 40 Accelerator boards?

Peter Holdorf
USS Carl Vinson
USA

The Hi-Q Tower is actually manufactured in this country by a company called (perhaps unsurprisingly) Hi-Q Ltd. It's basically a replacement casing for the A500 that houses the A500's innards inside a very posh PC-like tower casing. Extra disk drives, hard drives and even Amiga 2000 expansion boards can be added internally, all of which are driven by a very high-rated 200W power supply. In theory, there's no reason why 2000 processor cards won't work with the Hi-Q Tower, but you should check before handing over your hard-earned cash for the product.

I did have a chance to play with the Hi-Q Tower about two years ago, but the Tower that the manufacturers demonstrated to me was a very early pre-production model. Since then, the company has been surprisingly quiet despite repeated requests for a review model.

Who knows, perhaps Hi-Q will read this and finally send through a review model, therefore allowing us to rate it for ourselves. We certainly haven't received any complaints from other readers concerning the Hi-Q Tower, but it would still be nice to be able to see the thing 'in the flesh'. However, if you want to know more you can phone Hi-Q yourself on ☎ 071-923 0658. ***JH***

MAKING NEW SOUNDS

I have recently bought a PSS 790 keyboard and although I'm pleased with the sounds I was wondering if there is any way to alter the existing sounds or create new ones. I have heard of patch editors for the more expensive Yamaha synths. Is there any PD or commercial editors available for my synth?

Steve Bird
Upper Mill
Oldham

The short answer is no because the PSS 790 uses preset sounds and these cannot be altered. Your model does however allow new mixes of preset voices to be created (the manual calls this Vector Synthesis) but this is not the same as creating voices from scratch. I'm fairly certain that there is no software around to help with this and, because of the limited sysex facilities, I'm not even sure that a patch-mix type editor could even be written to help with PSS 790 voice mixing. ***PAO***

WRONG PAGE LENGTH

I am using *Professional Page 3* to print various documents, posters and so on. But after switching on my DeskJet 500 the first page always prints half-an-inch higher than all subsequent pages.

I am using A4 paper and have paper length set to 70 lines in Prefs. I have tried altering the DIP switches on the printer to no avail.

Robin Dunway
Billericay
Essex

The DeskJet needs a bit of the top of the paper and a bit of the bottom of

continued on page 52

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continued from page 49

the paper in order to feed the paper into and out of the printer. When it reaches the physical bottom of the paper the printer feeds the paper out, and the next sheet in, then prints the bottom of the previous page (which is in all probability blank) on the new page before starting on the new page.

Reduce your Professional Page page size by one inch, and start work right at the top of the on-screen page, remembering that when printed there will be a printer-enforced top margin. ***JW***

THE FAST LANE

I would be grateful if you would please answer three questions, as no one else I know can:

a) I currently have an A1500+ with a CSA-68030 33Mhz card with 2Mb and 512K Static Kickstart shadow RAM, and a GVP Hard/RAM card with 2Mb RAM and 180Mb SCSI hard disk. The question is, would I gain any performance benefits if I was to purchase an A3000, replacing the hard drive with my current one? More specifically, I have read that the A3000 has a faster SCSI transfer path from the interface to its memory, which is quicker than my setup. If it is faster, how much faster would it be, or is it irrelevant due to the average access time of the hard drive itself being the most predominant factor? Also, does the A3000 address Chip RAM faster than my accelerated system?

b) Why won't my A1500 print anything? If I use the V1.3 parallel device, it works without any problems. I have tried removing all the other devices in my system, and I still experience the problem under WorkBench 2.04. I have tried my Kickstart chip in a friend's A2000 and it works, but on another friend's machine – this time an A1500, it does not work.

c) Is the A3000 capable of accepting the new AGA chipset as found in the A4000?

Mr A Alam
Old Trafford
Manchester

a) The A3000 is an improvement over the A1500 because it is a full 32-bit machine, and this includes the Chip RAM. The result of this is that machine performance is generally much better than an equally accelerated (25Mhz 68030) A1500/A2000. The A3000's SCSI interface is particularly good as SCSIs go, and is very efficient and extremely quick. It is also exceptionally reliable: I have three devices attached to my A3000T and have had no problems in the 18 months I have owned the machine. Whether or not it would be faster than your setup I am not sure. It depends on the speed of your drive, and the speed of the GVP hard-card. You should notice a general speed increase of all operations by upgrading to an A3000, which incidentally represents excellent value for money at the moment.

b) The A1500 and the A2000 are actually identical boxes. The only difference is that the A1500 has two floppy drives, and the A2000 now ships with 52Mb hard disk and only one floppy drive. I doubt very much that it is a fault in the Kickstart chip, as that would cause the machine not to work at all. It is more likely to be either an incompatibility problem in the printer, or cable, which arises because of software changes under 2.04 or a fault on your motherboard which does not affect the 1.3 parallel device. I would suggest taking the entire machine to your dealer and trying it out with several printers.

c) The A3000 is not capable of accepting the new AGA chips. The AGA chipset is a full 32-bit system, where as the ECS in the A3000 is 16-bit. There aren't the gaps on the motherboard to fit the AGA system. Having said that, I am sure this will not stop some enterprising company from at least having a go, but don't rely on it. ***TS***

1200 GOOD QUESTIONS

I have been considering the purchase of an Amiga but recently the A500 Plus has been discontinued. I am therefore now left pondering which machine I should buy. Until recently, the only option was the A600 but I see that Commodore have now launched the A1200. Can you please answer the following questions:

a) What machines is the A1200 compatible with?
b) How many expansion ports does the A1200 have?
c) What are the main advantages of the A1200 over the A500/A600?
d) Is the A1200 just a games machine or a serious computer?
e) What are the disadvantages of the A1200?

Deborah Waters, Tooting, London

a) The Amiga A1200 is software compatible with the entire range of Amiga computers. Due to the machine's advanced design, there are bound to be some software titles (mainly games) that won't work on the A1200, but these are in the minority.

b) The A1200 has exactly the same expansion ports as the A600 plus an extra CPU port which replaces the A600's limited trapdoor connector.

c) There are several major advantages that the A1200 offers over the A600 and A500 machines. The most obvious of these is speed – because the A1200 uses a 68020 processor backed up by full 32-bit architecture, it runs about three times faster than a standard Amiga. The other big advantage of the A1200 is its 'AGA' (also known as 'Double A') custom chip set. Offering a colour palette of over 16 million colours, the A1200 is capable of displaying a maximum of 262,000 colours on screen at once. Compare this to the A600's 4096 colour palette and you'll soon start to appreciate why the A1200 is the future!

d) The A1200 is both. When it's not being used as a serious computer for graphics, animation, music, word processing, CAD, DTP, video or whatever, the A1200 also plays a damned good game.

e) None that I can think of! ***JH***

COLD COMFORT

In my WBStartup drawer I have *VirusChecker 6.1* running. However, when I also run the Citizen Print Manager, a window pops up telling me that the 'Cold-Capture Vector' has been changed, and should it fix it. Up to now I have withstood my curiosity and have not done this, but I would like to know what this is, and what would happen if I altered it. Also, will I need WorkBench 2.1 to enable me to use high density disk drives?

AC Tetley
Lincoln

The Cold-Capture vector points to programs which are run after your computer is reset. This is one of the ways in which viruses cause their damage: they install themselves on the Cold-Capture, and consequently can survive a soft reset (Control-Amiga-Amiga). Quite why the *Print Manager* is writing to this is beyond me, and perhaps that is a question you ought to pose to Citizen. In the meanwhile, I presume the *Manager* is also in your WBStartup drawer. If this is the case, there is a nice easy way of stopping *VirusChecker* from continually telling you about this vector. Open your WBStartup drawer, click once on *VirusChecker* and select Information from the Workbench menu. Now add a new tool-type of **STARTPRI = -20**. This will ensure that *VirusChecker* gets run last.

Be careful about high density drives. You don't, theoretically, need Workbench 2.1 to use them, Workbench 2 has all the necessary support to handle them. The problem is, that they are not standard high-density drives. You cannot simply buy a PC one and plug it in – it is a special dual-speed Amiga one, which is not yet available separately. ***TS***

THAT'S THE SIZE OF IT

Can you please tell me how to get my Amiga 500 to work in interlace mode for video work without halving the height of my graphics fonts?

If my Rendale 8802 genlock is connected and fed with an external pulse signal (for example, from a video recorder or camcorder), the Amiga immediately goes into interlace without shrinking my fonts. However, it's not always convenient to use my camcorder or VCR for this purpose.

Using *DPaint III* it is possible to go into interlace and then stretch the fonts used in the program back to the original size – but I want to use programs other than *DPaint*.

Geoff Welch
Appleton
Cheshire

Ah, this is a clear case of "When is interlace not interlace"? And the answer is of course: when it's interlace, that's when.

I'd better explain. In television terms interlace refers to the practice of making up a single frame of 625 line video image from two 'fields' of 312.5 horizontal lines, each of which change every 50th of a second and give the appearance of a single coherent picture. Incidentally, it is this rapid alternation which can give rise to the dreaded screen flicker which some people find so distracting on their Amiga.

But in Amiga terms the number of horizontal and vertical lines which make up a screen are what affect the size of your fonts, whether a display is interlaced or not.

The reason for this is that all the fonts displayed on the Amiga's video screen are bitmapped fonts – which means that each letter is made up of a fixed pattern of dots which defines its shape and size. If we use a standard lo-res screen (320 by 256 pixels) as a reference and place a letter on it, it will appear to be 'normally' sized.

But if we place the same letter on a hi-res screen (640 by 512 pixels) it will appear as exactly half its 'normal' size, because the relative size of the pixels which make

up the screen are half that of a lo-res screen. It follows that on an 'Interlace' screen (320 by 512) the same letter will be half-height but 'normal' width. Following this logic you might expect a lo-res overscan screen (368 by 290) to distort the fonts in proportion to the extra size. Not so, as the pixels remain the same relative size so long as the screen resolution remains the same.

As you mention, it is possible to resize the letters in *DPaint*, but this is not the ultimate solution, since what is really required is to resize the whole font. For instance, if you want a 60 point font (which really means 60 pixels on the Amiga) to be the same size on a lo-res screen as on an Interlace one then you would need to have two sizes for that font – 60 and 120 pixel. Resizing fonts cannot easily be done without using special programmes, and the only one which I can recommend is called *Calligrapher*, though I couldn't tell you whether or not it is still available, being quite an old program by now.

To prove what I say is correct, find a font which has a range of sizes and look at their relative screen sizes in different resolutions. Then try using these fonts in different programs and decide how to go on from there.

When the genlock 'interlaces' your Amiga image it does a TV interlace, not an Amiga interlace, if you see what I mean. This is why the fonts don't shrink, whatever Amiga screen mode you are in. So, if necessary, you could safely disconnect the video input while you work and suffer no ill-effects, because the genlock is not responsible for any font shrinkage which occurs. ***GW***

MEMORY HEADACHES



I have recently seen advertised in your magazine ProAgnus 2Mb (Obese Agnus with 2Mb Chip RAM on board) by WTS Electronics for £139. This appears very reasonable, and is British made. I have also seen DKB's MegaChip 2000 at £170. Are they similar? I haven't seen any reviews of the WTS Board. Would fitting a 2Mb Chip RAM board cause compatibility problems with my RAM expansion. I do not want to cut the tracks on the circuit board as I think this causes problems for large trapdoor expansions. I believe they have to be connected to the Gary chip – can more than one item be linked to the Gary chip or not? I intend to eventually purchase a GVP hard drive and accelerator: are there likely to be any problems with my setup as envisioned?

JA Clague
Ramsey

While I have not used the WTS ProAgnus board I have used the DKB board a lot, and it is a very good expansion. It is small and compact, small enough even to fit inside the casing of the CDTV.

Unfortunately the DKB board (and almost certainly the WTS board too) will need alterations to your revision 5 motherboard for them to work, and yes, this will cause major problems with your large trapdoor expansion. It is unfortunate that many trapdoor RAM expansion designers did not follow Commodore hardware guidelines and produced add-ons that are not compatible with 1Mb or 2Mb Chip RAM. Your best option is to get rid of your trapdoor card and add external memory in your GVP A530 accelerator/hard disk when you get it. ***JR***

AREXX ALONE



I want to start using ARexx but I only have Workbench 1.3. As I do not intend upgrading to Workbench 2.04, I was wondering whether it is possible to buy ARexx separately. How much does ARexx cost, where can I buy it from and is it compatible with *AMOS Professional?* Also, is it possible to use a stand-alone version of ARexx with *CanDo?*

Paul Clifton
Swindon
Wiltshire

ARexx has been available since 1987, during which time it has undergone continued development. The latest release, version 1.15, is available separately from Workbench 2.0 for around £40 from HB Marketing, who can be contacted on ☎ 0753 686000. Thanks to Europress' decision to support ARexx, *AMOS Pro* is fully compatible with ARexx. I'm afraid it's not possible to include a stand-alone version of ARexx with your *CanDo* decks. All the ARexx files are part of a commercial package, so including any part of ARexx with another program is an infringement of both Commodore's and William S Hawes' copyright. ***JH***

AERIAL VIDI HELL



I bought a Rombo *Vidi-Amiga 12* (v1.072) for my A500 Plus but I can't get it to work properly.

The first thing wrong was that the lead supplied with the system wouldn't fit onto the TV output of my Philips VCR, so I got an adaptor and managed to connect it up. When I tried to use *Vidi* to 'grab' something I got a message saying 'No Video Signal'. So then I tried connecting the *Vidi* to the Amiga's black and white output (as it says in the troubleshooting part of the manual) and this time it all worked fine and I was able to grab a screenshot of the *Vidi-Amiga* program. So I thought I'd try connecting it up to the SCART output of my VCR – but that didn't work either.

In a review of *Vidi* in *Amiga Format*, Jason Holborn had no problems using a Panasonic video recorder and camera. However, when I tried using a friend's Panasonic video with the *Vidi* the 'No Video Signal' message appeared again. This also happened when I tried it with a video camera (the Philips Explorer).

In a final desperate attempt to get Vidi to work I tried changing the frequency of the channel the video recorder outputs but to no avail. So I reckon it's about time to ask the experts for the help that I need. I hope there is a solution to my problem as I would hate to be unable to use my *Vidi*. Do I need a signal converter for my video recorder or is there something wrong with the video cartridge that I bought?

Ray Hourigan
Limerick
Ireland

You're going to kick yourself when you read this Ray, but I think that your problem has an extremely straightforward cause – if I understand your letter correctly.

It seems to me that you have been trying to use the AERIAL (or RF) outputs from all the various pieces of equipment which have frustrated your attempts to use the *Vidi-Amiga 12*, with the obvious exception of the Amiga's composite output – which worked fine. Here lies your trouble. Only composite video or S-VHS signals will work with the *Vidi-12*. For technical reasons, RF signals are totally incompatible and, as you have discovered, will not work!

I can understand how you became so confused though, because the connector on an aerial cable can easily fit into the phono-style sockets which are fitted to many Amiga video devices.

Try using a composite video input and I am certain you will find the *Vidi-Amiga 12* works perfectly. ***GW***

MUSIC FORMATS



I have *Music X* and the DMCS music packages. DCMS will load and save SMUS type files and Music X will convert SMUS files to Music X files but not Music X to MIDI or SMUS type. Is there any program, PD or otherwise, that can?

J Dabell
Chilwell
Beeston

The *AMFC* program is supposed to do these types of conversions although I must admit I've not actually tried it. *AMFC* costs £5 and is available from AmigaNuts United, 169 Dale Valley Road, Hollybrook, Southampton S01 6QX (Fax 0703 785680). ***PAO***

continued on page 56

JARGON BUSTING • JARGON BUSTING

Agnus chip – the custom chip dedicated to graphics. The first three versions – 8361, and the 8370 and 8371 Fat Agnus – can access 0.5Mb of Chip RAM. A later version, 8372a, can access 1Mb; while the ones used in A500 Pluses, A600s, A1200s and A3000s can access 2Mb.

ARexx – an interpreted programming language that is included as standard with Workbench 2 and above. It is used extensively to control other programs, and is a great aid to multitasking.

Digitiser – a device which takes the analogue information taken by a source such as a video camera and converts it to digital screen information for use by a computer.

Fast RAM – any extra memory which is not Chip RAM. The custom chips cannot access it, and because such accesses to Chip RAM can block out the central processor and slow down its own accesses, Fast RAM is faster.

Interlace – a method used to double the apparent vertical resolution of the monitor by alternately refreshing the screen at a slight vertical offset, thus squeezing an extra line between each of the lines of a non-interlaced screen.

Virus – a small program that can lie hidden in memory or on a disk, duplicating itself on to any disks inserted in the machine, and generally causing havoc. There are many virus killers available in the public domain designed to deal with this menace.

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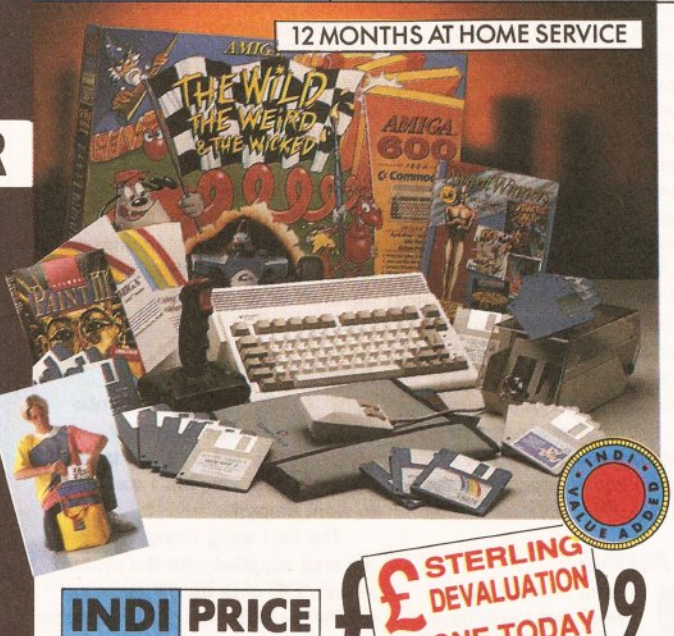
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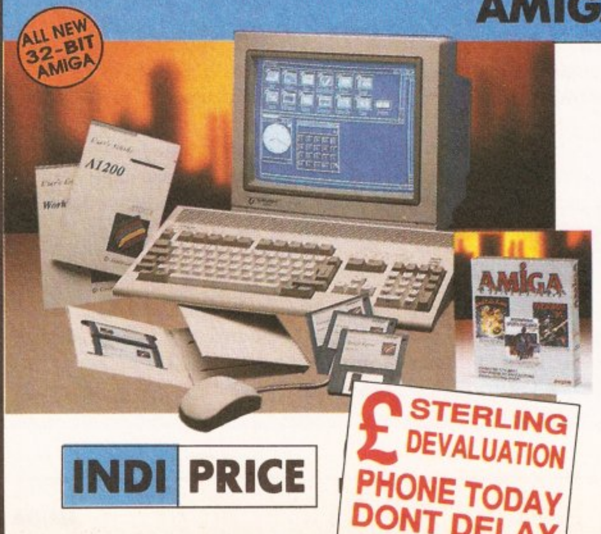
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Program Name: set_a_pointer
Language: 68000 Assembly Language
Problem: The mouse pointer does not change when the user clicks in the opened window
Author: RS Foster, Strinesdale, Lancs

CODE CLINIC

For our first issue of Code Clinic, we have bugs in an assembly language program written to open a window on screen and then change the mouse pointer when the user clicks in it.

The program in question had one comment in it. We'll ignore it this time, but please comment your programs well. It makes debugging so much easier. There were several bugs in the program I was sent:

1. The routine **openint** should open the intuition library. Well, it does, but it does not check the return value. It is possible that the Exec will not be able to open it. You should check all return values from routines that might not work just in case. If intuition had not opened, in this case the program would crash.

2. The routine **winopen** should open the window. This routine also does not check to see if the window opened or not. In the case of windows, in low memory conditions, or if you got your window information wrong, the window would not have opened and the program would have crashed when it called **SetPointer**.

3. The routine **custpointer** which sets up the custom window pointer sends the wrong information to the intuition routine **SetPointer** - which is what is causing the program to fail. This fragment of code is the culprit:

```
custpointer:
    move.l        windowhd,a0
    move.l        ptr,a1
    ...
```

The line **move.l ptr,a1** should be **lea ptr,a1**. The **include**s and **autodocs** for the intuition function **SetPointer** define the register A1 as being a 'pointer to the data definition of a sprite'. Consequently you must pass **SetPointer** a pointer to this data, instead, you were actually pointing it to the address $00000100, the first long word of data in your sprite. This is why the sprite went blank, as this memory probably contained zeroes.

WHAT TO SEND US...

Don't send reams and reams of listing paper with a program on it. Try and give some sort of clue as to what is not working, and where the error might be, and send a summary. If you must send in big programs, send them on disk, but note that we cannot return them unless you enclose an SAE.

We can't do anything with messy or uncommented programs. The first rule of programming is to structure and comment your program well. Also, use Commodore's function names. This means using names like **OpenLibrary**, and **OpenWindow.** (This is primarily an assembly language programmer's problem.) Again, programs that use names like 'openlib' and 'openwin' will be assigned to the round filing cabinet on the floor (the bin).

GENERAL OBSERVATIONS

1. The program was very difficult to follow, because you had not used the correct names for library functions. You should use the real names, like **OldOpenLibrary** and **CloseLibrary**. Also, by defining the offsets to these routines yourself at the start of your program you are increasing the likelihood of introducing errors. Always use the Commodore **include** files, which come with *DevPac*.

2. You are putting your entire program in Chip RAM using:

```
section code, code_c
```

Only the sprite data needs to be in Chip RAM. Put your program in Fast RAM if you can. I suggest that you have two sections: one of data_c for the sprite data and one of simply code for the program section. This way the program will get located in Fast RAM if it is available.

3. You have one comment in your program. You should document all routines that you have and state the input and output values for them.

4. Waiting for the joystick is not good technique. This is what's called a 'busy wait'. It loads the multi-tasking operating system badly and slows everything down. It's best to have a close gadget on your window and wait for it to be clicked on.

5. Use macros for calling OS routines. This way you don't have to worry about messing up the library bases and A6 by accident.

6. Don't use **OldOpenLibrary**. This was present on Workbench 1.0 and 1.1, but was superseded by **OpenLibrary** which takes an additional parameter for minimum version. If you're not fussed about version, specify 0.

7. Your window structure should really use the intuition **include** flags rather than meaningless values such as **$f**. See the example program.

A working (but not perfect!) version of this program is shown below. Happy coding! *TS* AS

LISTING: THE SOURCE CODE

```
ttl  "Program to set a mouse pointer in a window"
;
_EXECBASE:        equu    4 ; Exec library base.
;
       incdir    "include:"
       include   "exec/exec.i"
       include   "exec/funcdef.i" ; ** You may not ↵
need this
       include   "exec/exec_lib.i"
       include   "intuition/intuition.i"
       include   "intuition/intuition_lib.i"
;
SYS:   macro
       move.l    _EXECBASE,a6
       jsr       _LVO\1(a6)
       endm      ; Call exec.library
;
INT:   macro
       move.l    IntBase,a6
       jsr       _LVO\1(a6) ; Call intuition.library
       endm
;
       section   set_a_pointer,code
;
Start: moveq     #$00,d0; Not fussed about version
       lea       IntName,a1
       SYS       OpenLibrary
       move.l    d0,IntBase ; Store library base.
       beq       No_Intuition
;
; — Opened intuition OK, try and open window ...
       lea       Test_Window,a0
       INT       OpenWindow
       move.l    d0,Window_Handle ; Store window ↵
handle.
       beq       No_Window
;
; — Opened Window OK, set our pointer...
       move.l    Window_Handle,a0
       lea       Sprite_Data,a1
       moveq     #$10,d0
       moveq     #$10,d1 ; Sprite is 16 x 16
       moveq     #-7,d2
       moveq     #-7,d3 ; 'Hot-Spot' at -7,-7
       INT       SetPointer ; Set this pointer.
;
; — Now wait until user closes window ...
Wait_For_Close:  move.l  Window_Handle,a0
       move.l    wd_UserPort(a0),a0
       SYS       WaitPort ; Wait for a message.
       move.l    Window_Handle,a0
       move.l    wd_UserPort(a0),a0
       SYS       GetMsg ; Get the message.
       move.l    d0,a1
       move.l    im_Class(a1),d7 ; Fetch message type
       SYS       ReplyMsg ; Reply to message.
       cmp.w     #IDCMP_CLOSEWINDOW,d7
       bne.s     Wait_For_Close ; Not for us.
;
; — Close down routines ...
       move.l    Window_Handle,a0
       INT       CloseWindow ; Close our window.
No_Window:       move.l  IntBase,a1
       SYS       CloseLibrary ; Close intuition ↵
library.
;
; — Quit to DOS ....
No_Intuition:    moveq   #$00,d0
       rts       ; Return no error code.
;
; — Our Variable & Data Section
;
       section   variables,data
;
IntBase:         dc.l    0 ; Space for library base.
Window_Handle:   dc.l    0 ; Space for window ↵
handle.
IntName:         dc.b    "intuition.library",0
WindowName:      dc.b    "Amiga Shopper Code ↵
Clinic",0
       cnop      0,2     ; (Force even address now)
;
; — New Window structure ...
Test_Window:     dc.w    50,50 ; Window Start ↵
Position
       dc.w      300,100 ; Window Size
       dc.b      0,1     ; Pens.
       dc.l      IDCMP_CLOSEWINDOW ; We only want ↵
to know about close window
       dc.l      ↵
WFLG_CLOSEGADGET+WFLG_DRAGBAR+WFLG_SIZEGADGET+ ↵
WFLG_DEPTHGADGET
       dc.l      0          ; No gadgets
       dc.l      0          ; Checkmark imagary
       dc.l      WindowName     ; Title of window.
       dc.l      0          ; Screen pointer
       dc.l      0
       dc.w      64,64,640,256 ; Min/Max window size.
       dc.w      WBENCHSCREEN  ; Open on workbench.
;
       section   sprite_info,data_c
;
Sprite_Data:     dc.w    $0000,$06C0
       dc.w      $06C0,$0BA0
       dc.w      $0380,$0540
       dc.w      $0100,$0380
       dc.w      $0000,$0100
       dc.w      $0000,$0000
       dc.w      $0000,$0000
       dc.w      $FFFF,$0000
       dc.w      $0000,$0EA0
       dc.w      $0EA0,$1FF0
       dc.w      $0AA0,$1FF0
       dc.w      $0AC0,$1FE0
       dc.w      $0AA0,$1FF0
       dc.w      $0EA0,$1FF0
       dc.w      $0000,$0EA0
       dc.w      $0000,$0000
       dc.w      $0000,$0000
       dc.w      $0000,$0000
       dc.w      $0000,$0000
;
       END       ; End of program.
```

DOUBLE VISION

Whether you've £100 or £700 to spend, video digitisers are now available to suit every pocket. Gary Whiteley checks out what's up for grabs

This month there are two exciting arrivals on the video digitising scene: Rombo's price-busting *Vidi-Amiga 12*, and the Rolls-Royce of digitisers, JCL's *Colourpic Plus*. Both offer powerful new features to the Amiga video fan – though of course they belong in quite different price brackets: *Vidi-Amiga 12* retails at just under £100, *ColourPic Plus* at just under £700.

So, just in case anyone might get confused, I'd like to make it clear that this is not a comparative review, which is why I've described each digitiser separately. Although they have many features in common they are unlikely to be direct competitors. Rather, they represent two extremes of a specialised market. Right, explanations over, now read on...

ROMBO VIDI-AMIGA 12

What's black, comes from Scotland, is a little larger than a packet of fags, connects to your Amiga's disk drive and parallel ports and isn't made from girders? Rombo's new digitising box, the *Vidi-Amiga 12*, that's what.

And what exactly is a *Vidi-Amiga 12?* Easy. It's a hardware and software combination which lets you digitise video and turn it into pictures that your Amiga can understand. And since it costs less than £100, a first for an integrated colour video grabber, it must surely be a bargain.

So what's the difference between the *Vidi-Amiga 12* and Rombo's previous digitising package, *The Complete Colour Solution?* That's another easy one: there is no longer any need for a separate colour splitter as one is now integrated into the new unit; S-VHS as well as the usual composite video signal can be used; the software has been significantly retooled; the hardware noticeably improved; and the whole thing is markedly cheaper than its predecessor.

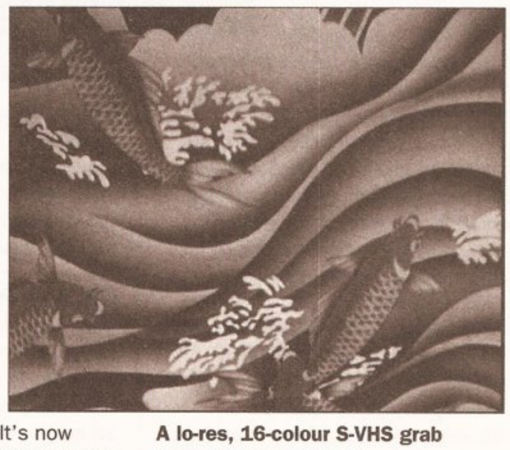
So, that's the introductions out of the way – now let's get on to seeing what the *Vidi-Amiga 12* can do!



Rombo's *Vidi-Amiga 12* (here pictured on top of the *ColourPic Plus*) is the first Amiga digitiser for under £100, and offers great value for money and remarkably good quality. But the *ColourPic Plus* (below) has more connectors, more controls, and a much wider degree of flexibility

GRAB THIS!

As you might expect, *Vidi-Amiga 12* can digitise video in a range of formats – from NTSC to PAL and from 2 colours to 4096 (in lo-res interlace). Plus it can produce HAM-E renders in 262,000 colours (if you have one of Black Belt's now obsolete HAM-E display devices) or in a 256-colour mode called EREG, which is designed with the new AA chip set graphic modes in mind. Normal screen sizes range from lo-res (320 by 256 pixels) to hi-res overscan (704 by 566), but the digitising area can also be defined to cover any rectangular portion of the video image.

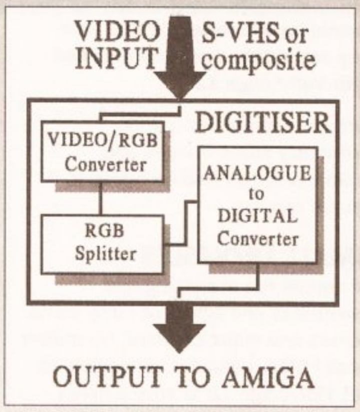


A lo-res, 16-colour S-VHS grab taken from a postcard

MUMMY, WHAT'S A DIGITISER?

A digitiser provides the means of converting an analogue video signal into digital data suitable for use by a computer. If a colour grab is required the video signal must be divided into its constituent red, green and blue components and each part then digitised separately – a step which is achieved by using either an electronic colour splitter when colour video is being grabbed, or a set of coloured filters when a black and white camera is used. After the image has been split and converted to digital data it is passed to the computer and the RGB data is recombined by software to produce a colour image file in a form which can de displayed by the computer.

There are two kinds of digitiser – termed Fast and Slow Scan because of the relative speeds at which they can grab an image. Fast Scan, as its name suggests, scans an image quickly because it uses a frame store – a special hardware device designed to sample and hold a video frame in memory. The advantage of such a system is that the captured image quality is usually very high and frames can be grabbed virtually instantly from moving video with few problems. Because the image is held in hardware memory it remains available for digitising until the buffer memory is cleared or rewritten. Fast Scan digitisers are generally more expensive than Slow Scan machines because they require more specialised hardware.



Here we see the basic mechanics of a digitiser – just three stages between the video and the Amiga

Slow Scan digitisers are just that – slow. But take that advisedly, as some are slower than others! Newer generation digitisers like *Vidi-Amiga 12* and *DigiTiger 2* are in fact very nippy, taking only seconds to grab in full colour. NewTek's *DigiView*, still a popular digitising choice, is showing its age in the speed stakes – it really is slow. Because such digitisers are slow they need to be fed perfect still images, since any movement during grabbing will either result in colour fringing when the individual R, G and B files are recombined or motion blurring in black and white grabs. Mind you, some of these 'errors' can produce interesting special effects if you can work out how to control them.

The *Vidi-Amiga 12* software is simple enough to use and I had no crashes at all during testing, which makes a refreshing change. In addition to the main display window there's a Grab menu for controlling the grabbing functions, and



Mouthwatering scenes like this can be easily grabbed with a normal camcorder and *Vidi-Amiga 12*

Preference menus for setting up both the Grab and Display parameters. Then there is the Carousel menu which is used to get an instant view of the images in the Amiga's memory and to play back sequences; the Edit menu which contains picture processing tools; and, finally, a Load/Save requester.

IN THE PICTURE

At the heart of the *Vidi-Amiga 12* is the Grab Control menu, where all the main grabbing functions are laid out. As well as being able to grab a colour picture in one smooth continuous action, *Vidi-Amiga 12* can also grab in black and white. It can also grab sequences of images from tape or live action – though only in monochrome and at a fairly slow rate of perhaps one or two frames per second, depending upon the selected grab size. If you prefer to grab images manually, for instance with a black and white video camera and colour filter wheel, each of the RGB components can be grabbed individually and then combined to produce a full-colour image.

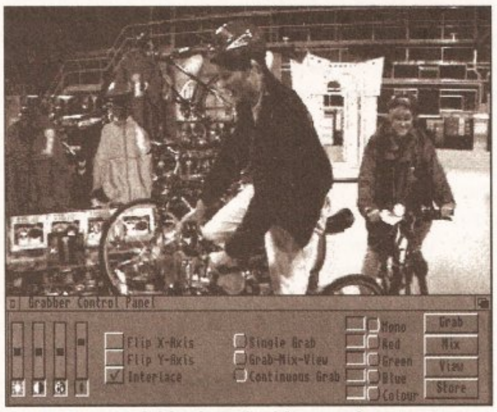
To make digitising easier a low-resolution black-and-white preview can be displayed, enabling framing and focusing without the need for a second monitor. Adjustments to the image quality can be made with slider controls for Colour, Contrast, Brightness and vertical position, and the whole image can be flipped around both the X and Y axes prior to grabbing. Further brightness adjustment is possible by tweaking a screw on the side of the hardware.

Once an image has been grabbed and its colour components mixed together it can be viewed to ensure all is well. However, if there is a problem the image cannot be tweaked using the control sliders. You have to adjust the controls and do the grab again. Before storing the image in memory you can readjust the mix by adding dithering (which mixes existing colours together to give the appearance that there are more of them), optimising the palette for best results or even altering the grab format.

If the grab is OK then hitting the Store button will transfer it to the Carousel and memory buffer of the main screen. This means that the stored image, or last frame of a sequence if Continuous grabbing was in force, will be displayed in the window on the main screen – clicking on it will cause it to be displayed full-screen.

ROUND THE CAROUSEL

Carousel is a film-strip window where all the images which are currently in the memory – regardless of whether they are animation sequences or still frames – can be seen in miniature. The whole lot can be played back on screen as an animated slide show, or a single frame can be loaded into the main window for subsequent full-screen display, Edit manipulation



A black and white preview screen helps you decide when to grab

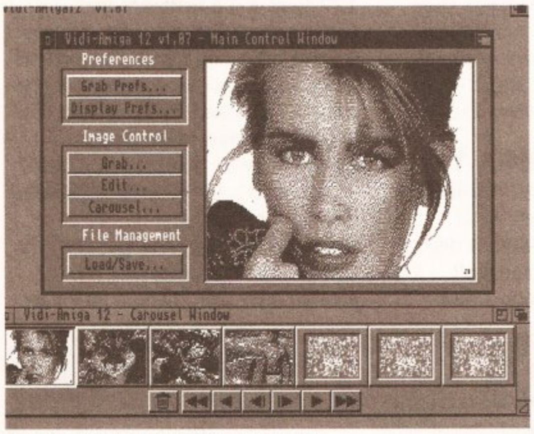
and/or saving. Unwanted images can be deleted – either singly or all together – but there is no way of selecting several pictures and deleting them all at once, which I thought was a small omission.

READY FOR EDIT

Edit is for globally processing an image. A range of eleven effects is available to emboss, false colour, blur and generally mess about with an image. Previously digitised images (or other IFF files, for that matter) can be loaded in and processed in the same way as a freshly-digitised one. The effects are certainly interesting and, while I personally wouldn't have much use for them, I'm sure that many *Vidi-Amiga 12* owners will love them.

LOADING AND SAVING

After grabbing to your heart's content you'd better save some of your creations. Since *Vidi-Amiga 12* can grab either stills or animations it makes sense that it can save both as well. Anims and images are saved as IFF format files which can be imported by other programs for



Simple layouts help you find your way around the software supplied with *Vidi-Amiga 12*

further treatment or output. Previously saved images and animations can also be reloaded if you so require.

SMALL TROUBLES

Of course not everything was sweetness and light, but I only came across one major problem. No matter what I tried, I found it impossible to get *Vidi-Amiga 12* to save a hi-res image, even though all the settings indicated that was what would happen. Instead I always got a lo-res interlaced save – which wasn't what I wanted. Actually, this isn't completely true because when I used an S-VHS camera I managed to save some hi-res overscan images, but I couldn't get the same results with a composite input.

In fairness to Rombo I should say that at the time of review a number of finishing touches were being made to the software – I am assured that this bug has since been trapped and killed, as have several minor ones which I didn't spot!

However, one addition I would be happy to see would be keyboard short-cuts, which always make life easier for the user.

I did try to do a few things that I shouldn't have, mainly because the documentation hadn't been fully completed when I was reviewing the product. Consequently I had a few small problems, but nothing of any real significance, and a call to Rombo soon put me straight.

LOOK AT THE QUALITY

Notwithstanding the slight problems mentioned above, the *Vidi-Amiga 12* is a major performer, especially when using an S-VHS source. I tried a variety of video sources and was generally happy with them all. As you can see from the sample images it is possible to get excellent quality HAM images with *Vidi-Amiga 12* with any reasonable quality video signal. Actually, I was very surprised at the quality which *Vidi-Amiga 12* could deliver – especially at such a relatively low cost.

Vidi-Amiga 12's system requirements are as follows: it will run on any Amiga computer with at least 1Mb of memory, though more will enable longer animation sequences to be grabbed. A1500/2000 owners will require a special connector cable (available separately). A video source with perfect freeze will also be required for static colour grabs.

SHOPPING LIST

Vidi-Amiga 12 .... £99.95
by Rombo, Baird Road, Livingston, Scotland EH54 7AZ
☎ 0506 466601

CHECKOUT VIDI-AMIGA 12

Documentation
Unfair to comment as the version I had was just a photocopied preview.

Features ●●●●○
Everything you need for good quality grabbing and more.

Quality ●●●●●
An excellent performer, given a half-decent input. S-VHS gives even more impressive results.

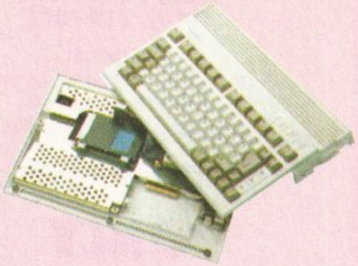
Speed ●●●●○
Grabs in colour very quickly, though subsequent processing does take a little while.

Price ●●●●●
Brilliant – worth twice the price.

Overall rating ●●●●●
Excellent results at a great price. Not much more you could ask from this five-star winner from Rombo.

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Darken menu items, and it may take a while to wrap your brain around the concept. But it is a more sophisticated technique than simply adjusting the 16 shades of the converted greyscale image up or down one value, which is what *DaataScan* does.

LOOK AT IT THIS WAY

Touch-Up can rotate clip areas to any angle in 0.1 degree steps, and it can also slant or 'shear' clips horizontally and vertically. As well as being able to flip clip areas horizontally and vertically, which any scanning software can do, *Touch-Up* can mirror an image to the left, right, above or below the clip, which makes it easy to create 'tiled' images or fancy borders, for example.

There are four levels of magnification: Normal, 4 times, 8 times and Full, the latter being a 'thumbnail' representation of the complete page that is similar to *DaataScan's* Master Page feature. Clip areas in *Touch-Up* can be moved by pointing inside the area, holding down the left mouse button and dragging the mouse. If you hold down Shift at the same time, whatever is in that clip area gets moved.

As well as scanning into clip areas, you can load into them, with the option to keep the image's aspect ratio, or ignore it and rescale the image to fit the area. Any IFF-ILBM image can be loaded up to Extra-HalfBrite and HAM, but not yet the new AA chipset formats. Coloured pictures get converted into black-and-white dither patterns.

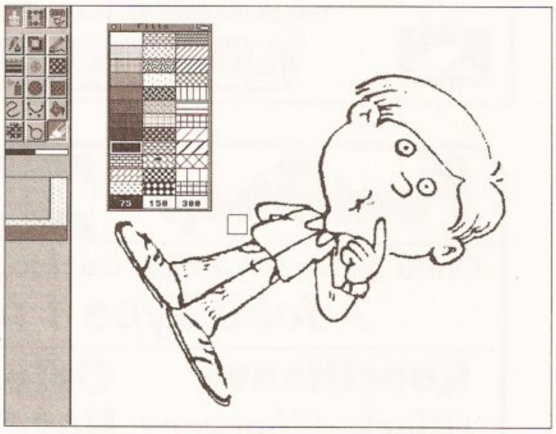
IFF-ILBM, IMG, PCX, TIFF, *MacPaint* and *PrintMaster* images can be loaded as full pages, and you are given control over how coloured images are converted to black-and-white dithers. This is another powerful feature of *Touch-Up* that non-techie users may find confusing. Reading the manual, experimenting and remembering are the keys to unlocking this door.

300 DPI IN THE SHADE

Clips or whole pages can be saved in eight formats: IFF-ILBM, IMG, PCX, TIFF, *Degas*, GIF, *MacPaint* and *PrintMaster*. These are in black and white only.

Greyscales can be saved in three formats: 16-colour IFF-ILBM, 256-colour TIFF or 24-bit IFF-ILBM. Despite the impression given by the adverts, the latter two formats contain only 64 shades of grey because they have been scanned with a 64-greyscale hand scanner. These images can't be viewed on (dare I say it) an 'old' Amiga; Amiga 1200 or 4000 owners should be able to view the 24-bit IFF-ILBM images but I haven't yet been able to test this. All three greyscale formats can be imported and printed by *PageStream*; *Professional Page* can handle the 24-bit and 16-colour IFF-ILBMs; *PageSetter II* and all of the 'graphics' word processors can take the 16-colour IFF-ILBMs.

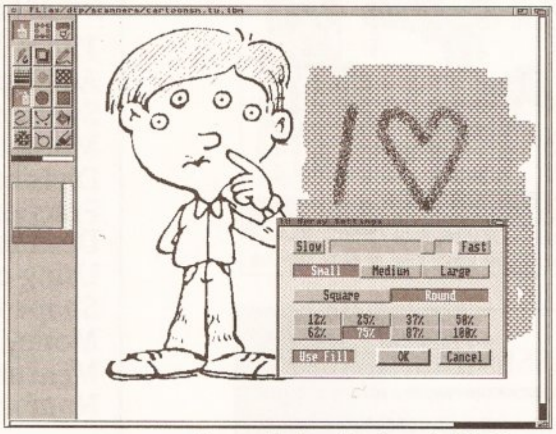
The quality of *Touch-Up's* 16-greyscale images is much improved. They look a little less sharp on-screen, but when scaled down to increase the output resolution, the printouts now almost always look better than the same picture scanned with rival scanners, especially with a printing package like *TurboPrint Professional*. *Touch-Up* has no direct printing facilities, so you must import your picture into another program that can print.



Touch-Up has 36 built-in fill or painting patterns in three sizes. If these aren't enough you can paint your own pattern, cut it out as a brush and paint with that

The drawing facilities in *Touch-Up* are superb, but designed specifically for working with large black-and-white images. You can't work on the greyscale image directly; this needs to be saved and imported into a dedicated colour painting package. Some consider this a weakness when in fact it is a strength: if you are a monochrome desktop publisher and you want to work on massive 2-colour bitmaps – 4,000 by 5,000 pixels for example – *Touch-Up* is the only Amiga program that can do the job. I must stress again, however, that you need the memory to work on pictures of this size.

Why would you want to work on images this size? Because Amiga bitmaps are low resolution (75 dpi) and print out at 100% scale with jaggy edges on curves and diagonals.



For working on black-and-white line art *Touch-Up* is far more useful than any Amiga painting package

But create the image big and scale it down at printing time to 25% of its original size, and each pixel becomes 1/300th of an inch instead. The jagged steps are now so tiny that it is hard for the eye to see them.

PROFESSIONAL PRIDE

Migraph has been working hard on *Touch-Up*. It has come a very long way since version 1.0, and if you have an earlier version you should consider upgrading. In the Scan Setting requester there is now a "Type: Hand" option, so flatbed scanner support may be on the way. You may or may not be interested in this – I'm merely pointing out that further development is still very much on the cards.

Some early versions of *Touch-Up* have bugs that cause crashes. I've used version 3.02 extensively (on a Workbench 2 machine) and it feels solid as a rock. It's a truly professional piece of work aimed at the professional or semi-professional user. But you do have to put your mind to it – it's not so much that *Touch-Up* is difficult to use, it's simply that it can do so much that novices can feel a bit swamped by the technology. AS

SHOPPING LIST

AlfaScan £119.95
by Golden Image UK Ltd, Unit 12a, Millmead Business Centre, Millmead Rd, London N17 9QU
☎ 081-365 1102

DaataScan £89.95
by Pandaal International Ltd
PO Box 2820
London NW6 3RD
☎ 071-328 1717

AND FINALLY...

The really great thing about the *DaataScan* and *AlfaScan Plus* scanners becoming so much better and cheaper is that it has brought them at least level (-ish) with the *Power Scanner* in quality and price. And of course both *DaataScan* and *AlfaScan* have features that the *Power Scanner* currently lacks.

This means that Power Computing will hopefully get the hump and further enhance the *Power Scanner* software, which in turn should inspire *Touch-Up* and *DaataScan Professional* to reach for greater heights.

So whichever you decide to buy, do make sure that you register and therefore become eligible for software upgrades.

FOR FUTURE PRESENTATION

And it looks like I've just got enough space left to mention the colour hand scanner that Power Computing has been advertising for quite some time now.

Power displayed the prototype at the recent Future Entertainment Show and there were a few small problems with the software, which the developers are currently in the process of ironing out – so beware of early reviews elsewhere.

My guess is I'll be able to take a look at the proper finished release version for you in next month's column.

CHECKOUT ALFASCAN PLUS

Ease of Use ●●●○○
A bit of a steep learning curve, but well worth the effort.

Features ●●●●●
No other Amiga hand scanner software can currently match the features packed into Touch-Up.

Speed ●●●○○
Gets faster the more memory you have.

Documentation ●●●●●
Excellent manual, although it does pack a lot in and cracks along at such a fast pace that the non-techie might feel a bit bemused by it all.

Price Value ●●●●○
As well as the scanner head, interface and Touch-Up software, you also get the Merge-It program, which enables you to fit two halves of a wide scan together to create one big image.

Overall rating ●●●●○

If it had some greyscale image processing tools like brightness, contrast and gamma controls, it would be near perfect. AA chipset support must now be a priority.

from video tape automatically, but a little preparatory work is necessary in this case. However, there are limitations, based on the amount of memory fitted to the *ColourPic Plus*. For example, with the standard 512K fitted, only two frames of full-screen video can be grabbed, while 11 frames of 1/4 screen, 28 frames of 1/9 screen or 50 frames of 1/16 screen are also possible. Note that the smaller screen sizes are not compressed versions of the whole image, merely sections of it, though it is possible to produce 1/4 screen compression via software.

Sequence grabbing can be triggered manually, but it can also be done automatically. This is where the audio ports on the back of the *ColourPic Plus* come in. If you have a VCR with audio dub capability, you can set an audio marker where you wish to start grabbing from on the tape. *ColourPic Plus* can be triggered by this audio marker and will start grabbing at the specified point. But don't despair – you can always add a short, loud noise to a tape being recorded to get the same effect if you haven't got an audio dub facility. Extended animations can be made using this feature as the software can recognise where it is and make adjustments to start digitising at the next ungrabbed frame in the sequence. Additionally, it is possible to tell the software how many frames to skip after the audio marker before it starts digitising.

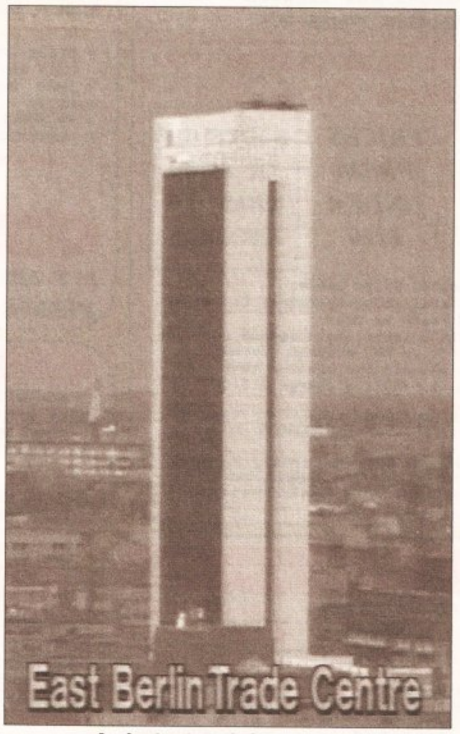
Grabbed sequences can be saved either as IFF sequences for assembly with other software, such as *Deluxe Paint IV*, or saved as special 64,000 colour files which can only be replayed with *ColourPic Plus*. Personally I found that the limited animation facility, while interesting, was little more than a novelty, but I'm sure there are some who will find it indispensable.

IMAGE PROCESSING

If you've spent ages getting a pristine grab you're unlikely to want to mess it up with image processing. But it is entirely possible that you'll need to process an image to use as a background for another graphic, for instance. By using the processing filters all kinds of operations can be done on an image, including softening, averaging, gamma, negative, embossing and so on. A grand total of 22 different effects are currently available.

TRICKY THINGS

ColourPic Plus has more tricks up its sleeve. Grabbed images can be flipped around both their X and Y axes, or subdivided into four identical images, or magnified so that a portion of the image is blown up to full screen size – with all the



An instant grab from VHS tape

attendant jaggies to boot. One half of an image can even be mirrored horizontally or vertically to produce split-symmetry pictures.

WHAT'S THE CATCH?

Now, I don't want to be a spoilsport, but surely for this sort of money it should be possible to easily grab an image in hi-res interlaced overscan, 704 by 566 pixels for example? Unfortunately this isn't the case. *Cabaret Plus* can't handle it without the addition of JCL's recently released £150 RAM card, and, though the older *ColourPic* software can do it, the process may take several minutes. In its defence JCL points out that grabbing moving images in hi-res interlace is pointless because of undesirable motion flickering problems – which is why *Cabaret Plus* includes a de-interlacing routine. Fair enough, but why should quality be compromised when digitising a still image from a video camera, for instance?

My second gripe is about the lack of dithering routines available with *ColourPic Plus*, an omission which surprised me. By adding at least simple dithering to the image processing operations I reckon that the display quality could be immensely improved and smoother-looking displays created.

I have to conclude that *ColourPic Plus* certainly provides high quality grabs, and has plenty of flexibility in both its hardware and software. It is extremely fast, and generally quite simple to use, yet it is so highly priced that I doubt if it will sell in any significant quantity.

ColourPic Plus requires: an Amiga with at least 2Mb of RAM, though more would be handy for large images or grabbing animations. A hard disk would also be useful to cope with the large data files. AS

DATA SHARING

Some readers have been concerned about problems that they have had using a parallel data transfer switch with the *Vidi-Amiga 12* and their printers. I tried using such a device with my Amiga 2000 and had no problems at all when switching between printer and digitiser.

However, a data switcher isn't necessarily a good idea as the data transfer rates between the digitiser and the Amiga can be adversely affected, possibly causing lost or confused data – and hence bad grabs – and so JCL expressly points out that data switches should not be used with its digitisers.

ANTI-A SUPER PACK

I thought you might like to know that Zen Computer Services has recently released a bundle for Amiga font buffs called the *AntiA Super Pack*, which comprises Zen's own *AntiA* font aliasing program plus 25 AGFA Compugraphic fonts in WorkBench 2 Bullet format. Also included are four pre-scaled and anti-aliased versions of each font ready to use in any graphics application which can utilise Colorfonts.

Amiga owners with Workbench 2.04 or greater can use the Bullet fonts with any software capable of scaling them on the fly, or make them into Amiga bitmap fonts using the WB2 *Fountain* program. Because they are scalable they don't produce the jagged edges normally associated with scaling up bitmap fonts, though they will never appear perfectly smooth because of the size of the pixels which make up the Amiga's video display. For great looking displays they can be converted to Amiga Colorfonts up to 180 lines high by using the *AntiA* program to produce smooth-edged, anti-aliased Colorfonts. The *AntiA Super Pack* costs £82.25 inclusive.

Alternatively, if you already have *AntiA* you can buy the Bullet fonts alone (with no scaled and aliased versions), for £49.35 inclusive.

Either way, if you're looking for high quality fonts suitable for a range of titling and graphics applications you should seriously consider these packs. I was using them recently with *Scala 1.1* and *MM200* to produce the graphics for the Future Publishing stand at the Future Entertainment Show just a couple of months ago and I must say that I was very pleased with their range and quality.

If you'd like to know more, or would like to get hold of the fonts for yourself, both packs are available direct from Zen Computer Services, 2 Silver Birch Grove, Swinton, Manchester M27 1FS ☎/Fax 061-793 1931. Note that Compugraphic fonts in Bullet format are not compatible with the CGFonts used by programs such as *Professional Page* and *PageSetter* as they use a different CG format.

SHOPPING LIST

ColourPic Plus £699
by JCL Business Systems Ltd,
71 St Johns Rd,
Tunbridge Wells,
Kent TN4 9TT
☎ 0892 518181

CHECKOUT COLOURPIC PLUS

Documentation ●●●●●
Excellent, nicely presented, well written, and full of useful information.

Features ●●●●○
Almost everything you might need for video digitising.

Quality ●●●●●
Undoubtedly excellent.

Speed ●●●●●
Fast and clean.

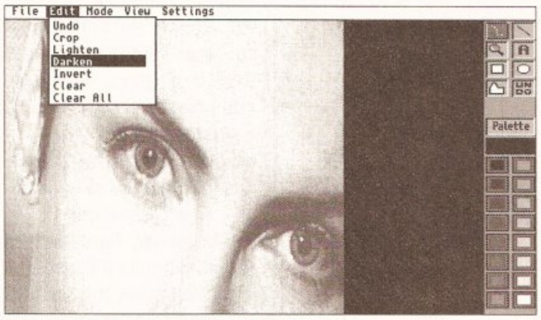
Price Value ●●●○○
Possibly overpriced, considering the competition, but I suppose you have to weigh up the pros and cons.

Overall rating ●●●●○

A very good digitiser, albeit expensive, which unfortunately suffers from a lack of hi-res interlace grabbing in the basic model.

halves, although this is only for those with the patience of saints.

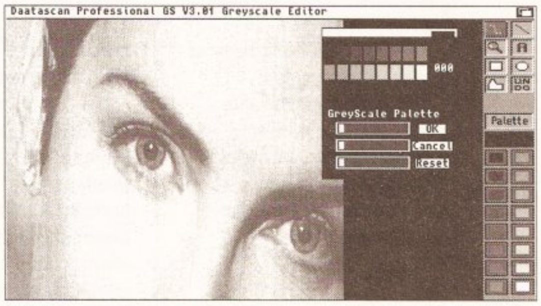
Many users will want to simply scan an image and then save it for importing into another program – an art package, word processor or DTP program perhaps. In this case you'd simply hit the correct button to set the resolution, make sure that the knobs on the scanner unit are set correctly, define the width and length of your scan in the Settings requester, hit the Scan to Page button, and away you go. It must be said that *DaataScan Professional's* greatest strength is that it is very simple to operate indeed.



Sometimes scans appear too dark or too light. *DaataScan's* Lighten and Darken options are a quick way to enhance them

The widest image you can scan is 4.13 inches, which is the width of the scanning head. This might vary slightly from one scanning head to another, but you can bank on at least four inches width. Length can be anything from a quarter of an inch to 48 inches.

Now, the bigger you set the scanning area or 'page', and the higher the scanning resolution you choose, the more memory will be required. If you don't have enough memory, *DaataScan* will let you choose only combinations for which you do have enough. If you've got lots of memory, the 'buffer size' can be set in the Preferences requester, which is the number of kilobytes you are allowing *DaataScan Professional* to use. *DaataScan Professional* will 'grab' this amount of memory and not let it go (mainly for reasons of speed). So, if you want to multitask, don't set this buffer figure too high.



There's definite room for improvement here. The *DaataScan* palette requester needs functions like Spread and Copy

SHADES OF GREY

The big changes to version 3.01 of the software can be found in the Greyscale menu and an new icon in the tool bar – Edit Greyscale. After converting a scan of a photograph or coloured illustration to 16 shades of grey, you are thrown directly into the new Greyscale Editor. As the black-and-white dither is converted to grey, the image in the Greyscale Editor is updated in real time. This is a nice touch because, depending on the size of the page, it can take a while to complete, and watching the screen update is much more pleasant than staring at an hour glass, stopwatch or 'sleepy' pointer.

The Greyscale Editor runs on its own screen. The left-hand portion of this screen contains your greyscale picture, while on the right is a tool bar that contains some simple drawing tools and a colour selector.

Further goodies can be found in the menus. The Edit menu has Lighten and Darken options. I think you can guess what they do, and they do it, like the greyscale conversion, in real time. The processes are destructive, though. By that I mean that three consecutive Darkens after three consecutive Lightens do not result in the original image.

There are three zoom levels – Normal, times 4 and times 8 – which come in handy for cleaning up any rough or dirty areas of your image.

The really fun stuff is in the Settings menu. In here is the Change Palette option, which puts up a small requester that enables you to change the 16 shades of grey to any 16 colours of your choosing. With the aid of the drawing tools and a little time and patience, it's quite easy (and great fun) to turn a 'boring' greyscale into a fairly pleasing colour picture. The drawing tools provided are Pencil (freehand), Line, Rectangle, Polygon and Ellipse – the shapes can be filled or unfilled. The Undo button in the tool bar comes in handy when you make gaffes, but it only reverses the last drawing function performed.

No other Amiga hand scanner software has a Text tool, but this one does. Any font in your FONTS: directory can be selected and typed onto the image, in any colour.

You can print your images directly from the Greyscale Editor. A print size of 100% is the default, and there are buttons for 25%, 50%, 75% and 200%. A string gadget allows you to enter anything from 1% to 9999%.

THE FINISHED PRODUCT

Printouts at 100% will always look a bit blurry because the image's screen resolution is a paltry 75-ish dots per inch. While scaling to 50% results in a smaller image, it will also be a sharper one. Printing is achieved via Workbench Printer Preferences, and the dither patterns provided by Workbench make as good a job of it as they can. If you want to enhance your printed greyscales then you'll need to have *TurboPrint Professional* running in the background.

Both the scanning and greyscale parts of *DaataScan Professional* run on a custom 640 by 256 screen. It cannot run on the Workbench, and it cannot be opened on any other type of screen – not even an overscanned one. This was a conscious decision by the manufacturers because most of their customers have only a little memory. I can understand the logic of this decision, but 640 by 256 is a horrible resolution to work with for scans because everything appears elongated on the screen. It might be an idea to give those who do have the hardware the option to use the software on a 640 by 512 screen.

DaataScan Professional has come on in leaps and bounds since the first version and now forms the basis of a seriously professional piece of software. The new Lighten and Darken features mean that the greyscales it produces are at least on a par, and sometimes better, than those produced with the *Power Scanner*. I hope the developers continue to develop it, with particular reference to two areas: the new AA chipset, which means that images can now (in theory) be converted and displayed in 64 shades of grey; and, of course, eradicating those annoying 400 dpi glitches. AS

CHECKOUT DAATASCAN

Ease of Use ●●●●●
Hand scanning couldn't be simpler. Click, click, scan.

Features ●●●○○
If it had lots of sophisticated features it wouldn't be so fast, nor so easy to use.

Speed ●●●●○
Pretty quick, but not quick enough to read the 400 dpi data and update the screen at the same time on a standard Amiga. No probs at 300 dpi or below though.

Documentation ●●●○○
I'd like to see a bigger manual with lots of examples and hints – with particular reference as to how to get the best printouts and how to use scanned images with word processing and desktop publishing software.

Price Value ●●●●○
It's now the cheapest Amiga hand scanner on the market. It does enough at the price to make it very good value.

Overall rating ●●●●○

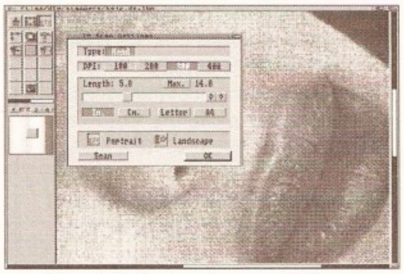
Absolutely perfect for the non-techie user with a limited amount of memory.

ALFASCAN PLUS

***AlfaScan Plus* is the name of the complete hand scanner package – the software is called *Touch-Up*. My two big gripes with earlier incarnations of *Touch-Up* were its poor greyscale conversions and the lack of a real-time scan.**

No real-time scanning meant that if you got the brightness wheel setting wrong you had to wait until you'd finished the whole scan to find out. Real-time scanning means you can see what's coming out of the scanner – you can twiddle the brightness knob and see the results straight away.

The problem with the greyscales was possibly subjective – my opinion, in other words. Migraph, makers of *Touch-Up*, couldn't see much wrong with them. But when you put them up against scans from rival scanners, the



If you hit the Landscape button before scanning sideways, *Touch-Up* will automatically rotate your scan by 90 degrees so it appears upright

Touch-Up scans always appeared dark and a bit blurry on screen. And the lack of specific Lighten and Darken options means that image processing has to be done by using patterned 'masks', a technique that most non-

AREXX FOR ALL

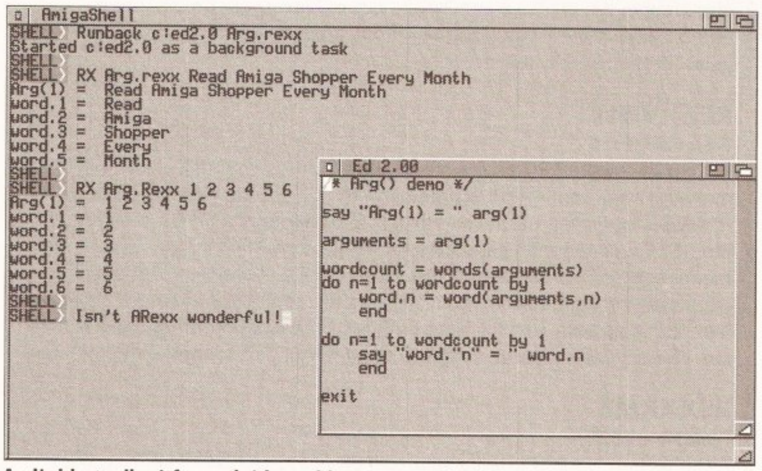
Need to give your commands further instructions? Jason Holborn shows how to have an argument with an ARexx script – and still finds time to go fishing for the latest PD ARexx software

Welcome back to *ARexx For All*. Or, if you just happen to have found an Amiga in your Christmas stocking and this is your first issue of *Amiga Shopper*, welcome to *ARexx For All*. For those of you who might be new to the column, this bit of the magazine is dedicated to ARexx, the programming language bundled with all Amigas – including the latest additions to the Amiga family, the A1200 and A4000.

So, what is ARexx anyway? If you haven't already stumbled across it on your Workbench disk, ARexx is a powerful and very versatile language. To put it in a nutshell, It can be used to write complete applications and even 'script' files that control other application programs.

> **"it can be used to write complete applications and even 'script' files..."**

We haven't really got the time or the space to back track through the last three months' worth of *ARexx For All*, so if you are new to the magazine and wish to learn more about ARexx, I'd strongly recommend that you spend that Christmas money you received from your Auntie Gertie on back copies of the last three issues of *Amiga Shopper*. But for the rest of you, let's get straight on with this month's installment of ARexx coding...



A vital ingredient for script-based languages: the ARexx function arg() allows you to pass arguments to your ARexx scripts from the command line

STOP ARGUING!

Up until now, the ARexx scripts that we've been writing have been pretty useless to say the least. As a demonstration of the fundamentals of ARexx coding they've served their purpose admirably, but an ARexx script (or indeed any program) is only really of use if you can feed it information in one form or another to process. Now, you could use the **pull** command that we covered in Issue 19 to prompt the user for any information that the script needs to execute, but it would be a lot nicer if we could feed our ARexx scripts information from the command line.

For example, say you were writing an ARexx script that merged the information held within two files. This sort of script would be far more useful if you could feed it with the filenames of the two files when you first run the script (just like an AmigaDOS command), therefore leaving you to get on with something more productive. If the script could accept command line arguments, it would also be very useful for use within AmigaDOS scripts. Indeed, you could use ARexx to extend AmigaDOS considerably, without having to resort to either C or Assembler coding.

Not surprisingly, ARexx does allow you to do just that. What's more, the process is actually very simple indeed. When a script is executed, either using the **RX** command from the Shell, or when it is called from another script, any arguments passed to it are automatically transferred to an internal ARexx function called **ARG()**. If the script is executed from the Shell, the **arg()** function copies every argument into a single continuous string of characters. These can then be accessed by simply passing the string returned by calling **arg(1)** into a variable. To do this, you just need to add the following to your script:

```
arguments = arg(1)
```

MULTIPLE ARGUMENTS

Obviously this is a little limited. After all, if you're passing two filenames to a script, you need to be able to extract both filenames individually. Thankfully, once the string has been passed to a variable, you can then split it into individual words using the following snippet of ARexx code:

```
wordcount = words(arguments)
do n=1 to wordcount by 1
   word.n = word(arguments,n)
   end
```

What this code does is to start by counting the number of complete words within the variable **arguments** (which was initialised earlier with the **arguments = arg(1)** call), using a function that we haven't seen before – **WORDS()**. **Words()** is a very simple function indeed. All is does it to count the number of words within a variable. In this case, we've passed it the variable **arguments** containing all our command line arguments. The value returned by the **words()** function is then placed into a variable called **wordcount**.

LOOPING THE LOOP

What follows is a loop that is performed once for every word within the variable, by counting from 1 up to the total number of words within the string (if there are 10 words within the string, the loop is therefore performed 10 times). On each pass, the variable **n** is incremented (in other words, 1 is added to it). This variable is very important indeed as it is used as a sort of word counter. When it equals 2, ARexx knows that we want to extract word 2, and so

LISTING 1 • LISTING 1

```
/*
Arg() demo

Run this script using RX Scriptname <arg1> <arg2> etc

*/

say "Arg(1) = " arg(1)

arguments = arg(1)

wordcount = words(arguments)
do n=1 to wordcount by 1
word.n = word(arguments,n)
end

do n=1 to wordcount by 1
say "word."n" = " word.n
end

exit
```

on. The task of extracting each individual word is left to the **WORD()** function, another new function that we haven't seen before.

ARRAYED IN SPLENDOUR

The **word()** function is a bit like the **Scanf()** function in C. What it does it to extract word number **n** from a given string. For example, if **n** equalled 7, the seventh word within the string would be extracted. The extracted string is then placed into a string array called **word**. String arrays are very simple in ARexx. Unlike BASIC, you don't have to tell ARexx how many elements are in the array. All you have to do is to state the name of the array followed by a full stop ('.') and then the number of the element within the array that you wish to access. For example, **word.2** would be the ARexx equivalent of **word$(2)** in BASIC.

Once all the words have been extracted, you can access each argument individually simply by reading the value held within the particular array element that you're interested in. If you wanted to copy the second argument into a variable called **variable2**, you would therefore issue the following line:

```
variable2 = word.2
```

The demonstration program given in Listing 1 shows the use of both the **arg()** function and the word extraction code that I detailed above. Type it in and play around with it. Don't forget to pass some arguments to the script when you execute it. If you don't, it won't actually do very much!

PARSE THE PARCEL

ARexx does provide a method of automatically extracting arguments from **arg(1)** using the **PARSE** command. We have looked at the **parse** command before, when it was used in conjunction with the **pull()** function to stop **pull()** from converting the text that you entered into upper case characters. In the case of the **arg()** function, **parse** can also be used to split a string into individual words (therefore removing the need for the code we covered above), but it does have one annoying drawback: instead of treating the spaces between each argument as dividers, **parse** will treat spaces as part of a word.

If you were to pass two arguments to a script, the second argument extracted by **parse** would have a leading space that you'd have to remove before the word could be used. If you just used the output from **parse** as it stood as a filename for accessing a particular file, ARexx would be unable to find that file therefore generating an error message. Listing 2 illustrates this process at work, and, because I'm a kind-hearted soul, also suggests a good way of getting round it. The main difference you'll notice between this program and Listing 1 is that the line that reads **arguments = arg(1)** has now been replaced with **parse arg arguments**.

Next issue we'll be taking a look at how to write your own functions and procedures and how to pass arguments to these functions. In the meantime, have a play with the **arg()** function and I'll see you all, same time, same place, next month.

LISTING 2 • LISTING 2

```
/* parse demo */

parse arg param1 param2 param3 param4

say "Here's those parameters... note the space!"
say param1
say param2
say param3
say param4

/* Strip out space... */

param4 = space (param4)

say "Now with no space..."
say param4

exit
```

AREXX For Free

The PD libraries aren't just full of useless Mandelbrot generators and phone book programs – they can also be an invaluable source of ready-made ARexx utilities and code. Here are just two or three ARexx utilities you shouldn't be without...

EXECREXX

Fred Fish #463

ExecRexx is a program that turns an ARexx script into an executable program that can be run from the CLI or WorkBench. This could come in handy if you don't wish to distribute the source code for your original script, or want to make an ARexx script that is easily run by a WorkBench user clicking on an icon for the executable.

The resulting executable still requires the *rexxsyslib.library* (that is, the ARexx server by Bill Hawes) as well as the Dissidents' *rexxlib.library* (a PD ARexx function library on Fish disk 393 that allows programmers to easily add ARexx implementations). These must be in the LIBS: drawer of the user's boot disk. The ARexx server should be started via *RexxMast* (by Bill Hawes). If either of these libs is not present, the executable will post an appropriate message to the user.

The resulting executable is fully re-entrant and can be made resident for improved speed. Otherwise, there is no speed difference between the executable and the original script. The added size to the executable is minimal due to the Dissidents' *rexxlib.library*.

ExecRexx isn't quite an ARexx compiler, but it's about as near as you're likely to get. If you're not overly keen on letting others sift through your ARexx code, it provides a very handy way of hiding your programming efforts, while still maintaining full ARexx compatibility. In all, *ExecRexx* is a must for the security conscious.

REXXVIEW

Fred Fish #516

Written by talented PD programmer Martin Kees, this small utility can be a real help when your ARexx scripts don't work quite the way they should. *RexxView* is a small CLI-based utility that monitors any messages sent to the REXX port and then generates a text file containing information on all the messages it encountered. This gives details of the task that sent the message, the action code, modifiers and the content of the **arg(0)** function (see the main body text for more on this useful function!). *RexxView* is also ideal for anyone contemplating adding an ARexx port to their own programs.

REXXRMF

Fred Fish #629

If you've ever wanted to write your own database program in ARexx, then this function library is for you. The *RexxRMF.library* is a library which gives ARexx programs the ability to maintain 'indexes' of small files for the purpose of providing fast search/sorting and retrieval of data records. The *RexxRMF.library* consists of several 'low level' functions that are used to maintain a balanced binary tree (AVL-tree) to index your data files. Built on top of the AVL-tree routines are 'high level' functions to provide simple record management facilities.

RexxRMF allows you to specify up to five alternate indices. What this means is that you can have multiple keys for the same file. This allows you not only to read a file by surname, for example, but also to use the month in which a person was born as an alternate key index. So, you could use the database as a reminder to send the person a birthday card in time for their birthday.

In addition to the primary and alternate indices, *RexxRMF* maintains an internal 'delete' index in order to locate and keep track of deleted records. In total, as many as seven indices could be present in memory at any one time for a given file. Each node (record) will require about 76 keylength bytes per record. Thus 2000 records could easily consume 150K.

Data records, on the other hand, are loaded into memory when read or written and are immediately discarded afterwards. Data records can have as many fields as you wish, as long as the total length of the record is less than 65K. In all, *RexxRMF* is an ideal addition to any budding application programmer's toolbox, making the task of writing programs that need to handle complex data files very easy indeed.

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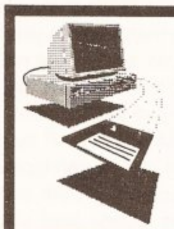
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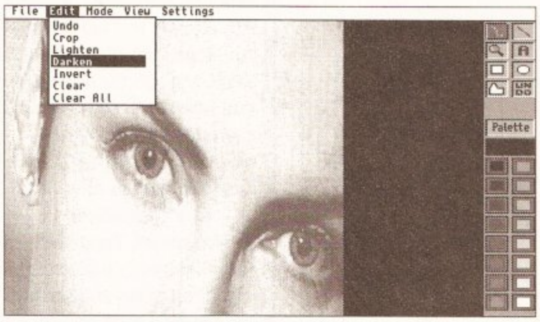
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halves, although this is only for those with the patience of saints.

Many users will want to simply scan an image and then save it for importing into another program – an art package, word processor or DTP program perhaps. In this case you'd simply hit the correct button to set the resolution, make sure that the knobs on the scanner unit are set correctly, define the width and length of your scan in the Settings requester, hit the Scan to Page button, and away you go. It must be said that *DaataScan Professional's* greatest strength is that it is very simple to operate indeed.



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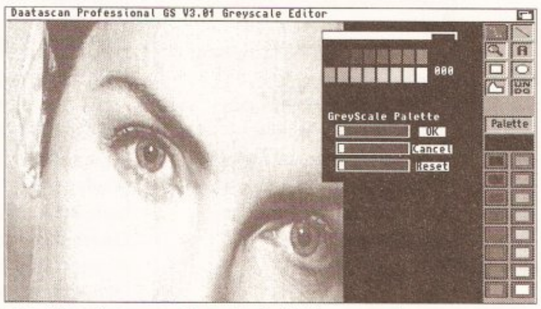
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You can print your images directly from the Greyscale Editor. A print size of 100% is the default, and there are buttons for 25%, 50%, 75% and 200%. A string gadget allows you to enter anything from 1% to 9999%.

THE FINISHED PRODUCT

Printouts at 100% will always look a bit blurry because the image's screen resolution is a paltry 75-ish dots per inch. While scaling to 50% results in a smaller image, it will also be a sharper one. Printing is achieved via Workbench Printer Preferences, and the dither patterns provided by Workbench make as good a job of it as they can. If you want to enhance your printed greyscales then you'll need to have *TurboPrint Professional* running in the background.

Both the scanning and greyscale parts of *DaataScan Professional* run on a custom 640 by 256 screen. It cannot run on the Workbench, and it cannot be opened on any other type of screen – not even an overscanned one. This was a conscious decision by the manufacturers because most of their customers have only a little memory. I can understand the logic of this decision, but 640 by 256 is a horrible resolution to work with for scans because everything appears elongated on the screen. It might be an idea to give those who do have the hardware the option to use the software on a 640 by 512 screen.

DaataScan Professional has come on in leaps and bounds since the first version and now forms the basis of a seriously professional piece of software. The new Lighten and Darken features mean that the greyscales it produces are at least on a par, and sometimes better, than those produced with the *Power Scanner*. I hope the developers continue to develop it, with particular reference to two areas: the new AA chipset, which means that images can now (in theory) be converted and displayed in 64 shades of grey; and, of course, eradicating those annoying 400 dpi glitches. AS

CHECKOUT DAATASCAN

Ease of Use ●●●●●
Hand scanning couldn't be simpler. Click, click, scan.

Features ●●●○○
If it had lots of sophisticated features it wouldn't be so fast, nor so easy to use.

Speed ●●●●○
Pretty quick, but not quick enough to read the 400 dpi data and update the screen at the same time on a standard Amiga. No probs at 300 dpi or below though.

Documentation ●●●○○
I'd like to see a bigger manual with lots of examples and hints – with particular reference as to how to get the best printouts and how to use scanned images with word processing and desktop publishing software.

Price Value ●●●●○
It's now the cheapest Amiga hand scanner on the market. It does enough at the price to make it very good value.

Overall rating ●●●●○

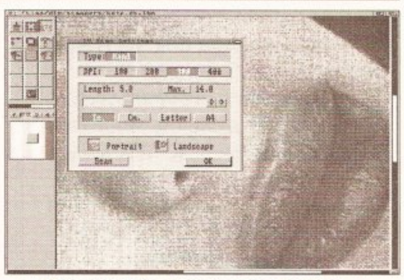
Absolutely perfect for the non-techie user with a limited amount of memory.

ALFASCAN PLUS

***AlfaScan Plus* is the name of the complete hand scanner package – the software is called *Touch-Up*. My two big gripes with earlier incarnations of *Touch-Up* were its poor greyscale conversions and the lack of a real-time scan.**

No real-time scanning meant that if you got the brightness wheel setting wrong you had to wait until you'd finished the whole scan to find out. Real-time scanning means you can see what's coming out of the scanner – you can twiddle the brightness knob and see the results straight away.

The problem with the greyscales was possibly subjective – my opinion, in other words. Migraph, makers of *Touch-Up*, couldn't see much wrong with them. But when you put them up against scans from rival scanners, the



If you hit the Landscape button before scanning sideways, *Touch-Up* will automatically rotate your scan by 90 degrees so it appears upright

Touch-Up scans always appeared dark and a bit blurry on screen. And the lack of specific Lighten and Darken options means that image processing has to be done by using patterned 'masks', a technique that most non-

from video tape automatically, but a little preparatory work is necessary in this case. However, there are limitations, based on the amount of memory fitted to the *ColourPic Plus*. For example, with the standard 512K fitted, only two frames of full-screen video can be grabbed, while 11 frames of 1/4 screen, 28 frames of 1/9 screen or 50 frames of 1/16 screen are also possible. Note that the smaller screen sizes are not compressed versions of the whole image, merely sections of it, though it is possible to produce 1/4 screen compression via software.

Sequence grabbing can be triggered manually, but it can also be done automatically. This is where the audio ports on the back of the *ColourPic Plus* come in. If you have a VCR with audio dub capability, you can set an audio marker where you wish to start grabbing from on the tape. *ColourPic Plus* can be triggered by this audio marker and will start grabbing at the specified point. But don't despair – you can always add a short, loud noise to a tape being recorded to get the same effect if you haven't got an audio dub facility. Extended animations can be made using this feature as the software can recognise where it is and make adjustments to start digitising at the next ungrabbed frame in the sequence. Additionally, it is possible to tell the software how many frames to skip after the audio marker before it starts digitising.

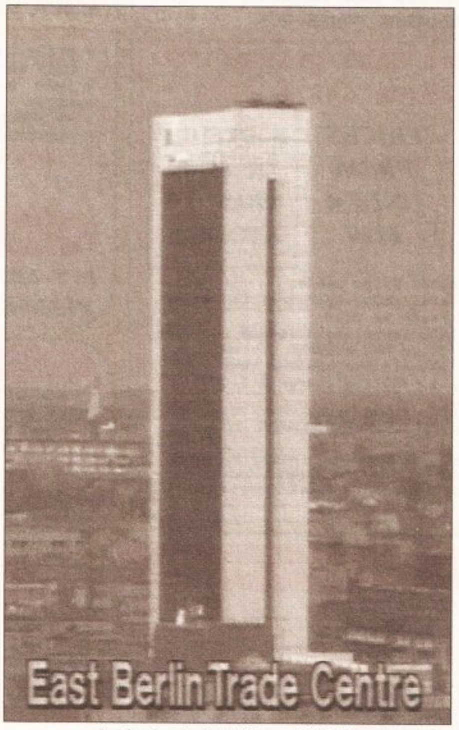
Grabbed sequences can be saved either as IFF sequences for assembly with other software, such as *Deluxe Paint IV*, or saved as special 64,000 colour files which can only be replayed with *ColourPic Plus*. Personally I found that the limited animation facility, while interesting, was little more than a novelty, but I'm sure there are some who will find it indispensable.

IMAGE PROCESSING

If you've spent ages getting a pristine grab you're unlikely to want to mess it up with image processing. But it is entirely possible that you'll need to process an image to use as a background for another graphic, for instance. By using the processing filters all kinds of operations can be done on an image, including softening, averaging, gamma, negative, embossing and so on. A grand total of 22 different effects are currently available.

TRICKY THINGS

ColourPic Plus has more tricks up its sleeve. Grabbed images can be flipped around both their X and Y axes, or subdivided into four identical images, or magnified so that a portion of the image is blown up to full screen size – with all the attendant jaggies to boot. One half of an image can even be mirrored horizontally or vertically to produce split-symmetry pictures.



An instant grab from VHS tape

WHAT'S THE CATCH?

Now, I don't want to be a spoilsport, but surely for this sort of money it should be possible to easily grab an image in hi-res interlaced overscan, 704 by 566 pixels for example? Unfortunately this isn't the case. *Cabaret Plus* can't handle it without the addition of JCL's recently released £150 RAM card, and, though the older *ColourPic* software can do it, the process may take several minutes. In its defence JCL points out that grabbing moving images in hi-res interlace is pointless because of undesirable motion flickering problems – which is why *Cabaret Plus* includes a de-interlacing routine. Fair enough, but why should quality be compromised when digitising a still image from a video camera, for instance?

My second gripe is about the lack of dithering routines available with *ColourPic Plus*, an omission which surprised me. By adding at least simple dithering to the image processing operations I reckon that the display quality could be immensely improved and smoother-looking displays created.

I have to conclude that *ColourPic Plus* certainly provides high quality grabs, and has plenty of flexibility in both its hardware and software. It is extremely fast, and generally quite simple to use, yet it is so highly priced that I doubt if it will sell in any significant quantity.

ColourPic Plus requires: an Amiga with at least 2Mb of RAM, though more would be handy for large images or grabbing animations. A hard disk would also be useful to cope with the large data files. AS

ANTI-A SUPER PACK

I thought you might like to know that Zen Computer Services has recently released a bundle for Amiga font buffs called the *AntiA Super Pack*, which comprises Zen's own *AntiA* font aliasing program plus 25 AGFA Compugraphic fonts in WorkBench 2 Bullet format. Also included are four pre-scaled and anti-aliased versions of each font ready to use in any graphics application which can utilise Colorfonts.

Amiga owners with Workbench 2.04 or greater can use the Bullet fonts with any software capable of scaling them on the fly, or make them into Amiga bitmap fonts using the WB2 *Fountain* program. Because they are scalable they don't produce the jagged edges normally associated with scaling up bitmap fonts, though they will never appear perfectly smooth because of the size of the pixels which make up the Amiga's video display. For great looking displays they can be converted to Amiga Colorfonts up to 180 lines high by using the *AntiA* program to produce smooth-edged, anti-aliased Colorfonts. The *AntiA Super Pack* costs £82.25 inclusive.

Alternatively, if you already have *AntiA* you can buy the Bullet fonts alone (with no scaled and aliased versions), for £49.35 inclusive.

Either way, if you're looking for high quality fonts suitable for a range of titling and graphics applications you should seriously consider these packs. I was using them recently with *Scala 1.1* and *MM200* to produce the graphics for the Future Publishing stand at the Future Entertainment Show just a couple of months ago and I must say that I was very pleased with their range and quality.

If you'd like to know more, or would like to get hold of the fonts for yourself, both packs are available direct from Zen Computer Services, 2 Silver Birch Grove, Swinton, Manchester M27 1FS ☎/Fax 061-793 1931. Note that Compugraphic fonts in Bullet format are not compatible with the CGFonts used by programs such as *Professional Page* and *PageSetter* as they use a different CG format.

DATA SHARING

Some readers have been concerned about problems that they have had using a parallel data transfer switch with the *Vidi-Amiga 12* and their printers. I tried using such a device with my Amiga 2000 and had no problems at all when switching between printer and digitiser.

However, a data switcher isn't necessarily a good idea as the data transfer rates between the digitiser and the Amiga can be adversely affected, possibly causing lost or confused data – and hence bad grabs – and so JCL expressly points out that data switches should not be used with its digitisers.

SHOPPING LIST

ColourPic Plus £699
by JCL Business Systems Ltd,
71 St Johns Rd,
Tunbridge Wells,
Kent TN4 9TT
☎ 0892 518181

CHECKOUT
ColourPic Plus

Documentation ●●●●●
Excellent, nicely presented, well written, and full of useful information.

Features ●●●●○
Almost everything you might need for video digitising.

Quality ●●●●●
Undoubtedly excellent.

Speed ●●●●●
Fast and clean.

Price Value ●●●○○
Possibly overpriced, considering the competition, but I suppose you have to weigh up the pros and cons.

Overall rating ●●●●○

A very good digitiser, albeit expensive, which unfortunately suffers from a lack of hi-res interlace grabbing in the basic model.

Darken menu items, and it may take a while to wrap your brain around the concept. But it is a more sophisticated technique than simply adjusting the 16 shades of the converted greyscale image up or down one value, which is what *DaataScan* does.

LOOK AT IT THIS WAY

Touch-Up can rotate clip areas to any angle in 0.1 degree steps, and it can also slant or 'shear' clips horizontally and vertically. As well as being able to flip clip areas horizontally and vertically, which any scanning software can do, *Touch-Up* can mirror an image to the left, right, above or below the clip, which makes it easy to create 'tiled' images or fancy borders, for example.

There are four levels of magnification: Normal, 4 times, 8 times and Full, the latter being a 'thumbnail' representation of the complete page that is similar to *DaataScan's* Master Page feature. Clip areas in *Touch-Up* can be moved by pointing inside the area, holding down the left mouse button and dragging the mouse. If you hold down Shift at the same time, whatever is in that clip area gets moved.

As well as scanning into clip areas, you can load into them, with the option to keep the image's aspect ratio, or ignore it and rescale the image to fit the area. Any IFF-ILBM image can be loaded up to Extra-HalfBrite and HAM, but not yet the new AA chipset formats. Coloured pictures get converted into black-and-white dither patterns.

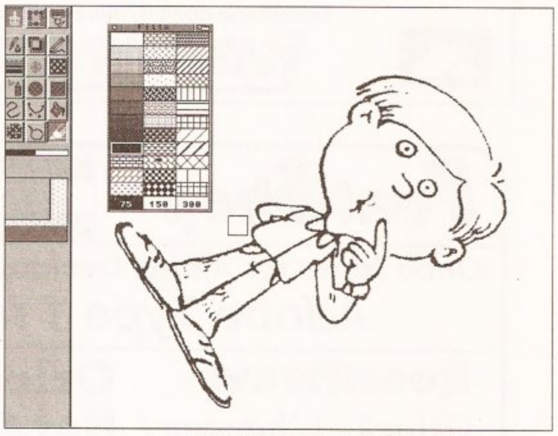
IFF-ILBM, IMG, PCX, TIFF, *MacPaint* and *PrintMaster* images can be loaded as full pages, and you are given control over how coloured images are converted to black-and-white dithers. This is another powerful feature of *Touch-Up* that non-techie users may find confusing. Reading the manual, experimenting and remembering are the keys to unlocking this door.

300 DPI IN THE SHADE

Clips or whole pages can be saved in eight formats: IFF-ILBM, IMG, PCX, TIFF, *Degas*, GIF, *MacPaint* and *PrintMaster*. These are in black and white only.

Greyscales can be saved in three formats: 16-colour IFF-ILBM, 256-colour TIFF or 24-bit IFF-ILBM. Despite the impression given by the adverts, the latter two formats contain only 64 shades of grey because they have been scanned with a 64-greyscale hand scanner. These images can't be viewed on (dare I say it) an 'old' Amiga; Amiga 1200 or 4000 owners should be able to view the 24-bit IFF-ILBM images but I haven't yet been able to test this. All three greyscale formats can be imported and printed by *PageStream*; *Professional Page* can handle the 24-bit and 16-colour IFF-ILBMs; *PageSetter II* and all of the 'graphics' word processors can take the 16-colour IFF-ILBMs.

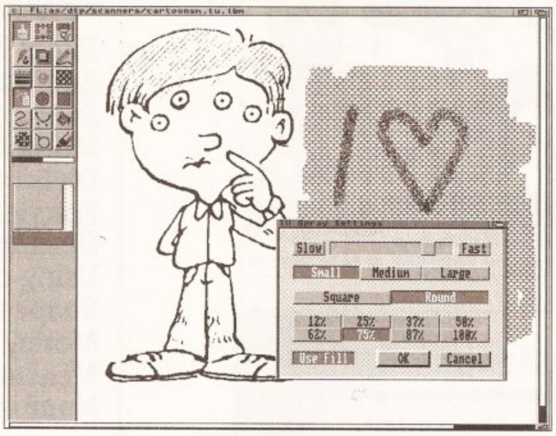
The quality of *Touch-Up's* 16-greyscale images is much improved. They look a little less sharp on-screen, but when scaled down to increase the output resolution, the printouts now almost always look better than the same picture scanned with rival scanners, especially with a printing package like *TurboPrint Professional*. *Touch-Up* has no direct printing facilities, so you must import your picture into another program that can print.



***Touch-Up* has 36 built-in fill or painting patterns in three sizes. If these aren't enough you can paint your own pattern, cut it out as a brush and paint with that**

The drawing facilities in *Touch-Up* are superb, but designed specifically for working with large black-and-white images. You can't work on the greyscale image directly; this needs to be saved and imported into a dedicated colour painting package. Some consider this a weakness when in fact it is a strength: if you are a monochrome desktop publisher and you want to work on massive 2-colour bitmaps – 4,000 by 5,000 pixels for example – *Touch-Up* is the only Amiga program that can do the job. I must stress again, however, that you need the memory to work on pictures of this size.

Why would you want to work on images this size? Because Amiga bitmaps are low resolution (75 dpi) and print out at 100% scale with jaggy edges on curves and diagonals.



For working on black-and-white line art *Touch-Up* is far more useful than any Amiga painting package

But create the image big and scale it down at printing time to 25% of its original size, and each pixel becomes 1/300th of an inch instead. The jagged steps are now so tiny that it is hard for the eye to see them.

PROFESSIONAL PRIDE

Migraph has been working hard on *Touch-Up*. It has come a very long way since version 1.0, and if you have an earlier version you should consider upgrading. In the Scan Setting requester there is now a "Type: Hand" option, so flatbed scanner support may be on the way. You may or may not be interested in this – I'm merely pointing out that further development is still very much on the cards.

Some early versions of *Touch-Up* have bugs that cause crashes. I've used version 3.02 extensively (on a Workbench 2 machine) and it feels solid as a rock. It's a truly professional piece of work aimed at the professional or semi-professional user. But you do have to put your mind to it – it's not so much that *Touch-Up* is difficult to use, it's simply that it can do so much that novices can feel a bit swamped by the technology. AS

SHOPPING LIST

AlfaScan **£119.95**
by Golden Image UK Ltd, Unit 12a, Millmead Business Centre, Millmead Rd, London N17 9QU
☎ 081-365 1102

DaataScan **£89.95**
by Pandaal International Ltd
PO Box 2820
London NW6 3RD
☎ 071-328 1717

AND FINALLY...

The really great thing about the *DaataScan* and *AlfaScan Plus* scanners becoming so much better and cheaper is that it has brought them at least level (-ish) with the *Power Scanner* in quality and price. And of course both *DaataScan* and *AlfaScan* have features that the *Power Scanner* currently lacks.

This means that Power Computing will hopefully get the hump and further enhance the *Power Scanner* software, which in turn should inspire *Touch-Up* and *DaataScan Professional* to reach for greater heights.

So whichever you decide to buy, do make sure that you register and therefore become eligible for software upgrades.

FOR FUTURE PRESENTATION

And it looks like I've just got enough space left to mention the colour hand scanner that Power Computing has been advertising for quite some time now.

Power displayed the prototype at the recent Future Entertainment Show and there were a few small problems with the software, which the developers are currently in the process of ironing out – so beware of early reviews elsewhere.

My guess is I'll be able to take a look at the proper finished release version for you in next month's column.

CHECKOUT ALFASCAN PLUS

Ease of Use ●●●○○
A bit of a steep learning curve, but well worth the effort.

Features ●●●●●
No other Amiga hand scanner software can currently match the features packed into Touch-Up.

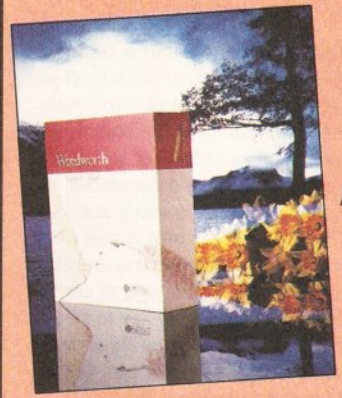
Speed ●●●○○
Gets faster the more memory you have.

Documentation ●●●●●
Excellent manual, although it does pack a lot in and cracks along at such a fast pace that the non-techie might feel a bit bemused by it all.

Price Value ●●●●○
As well as the scanner head, interface and Touch-Up software, you also get the Merge-It program, which enables you to fit two halves of a wide scan together to create one big image.

Overall rating ●●●●○

If it had some greyscale image processing tools like brightness, contrast and gamma controls, it would be near perfect. AA chipset support must now be a priority.



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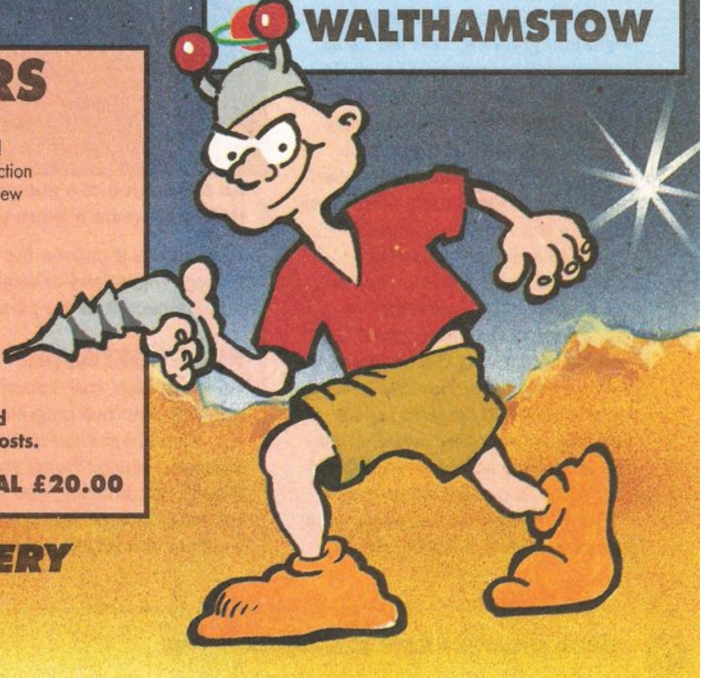
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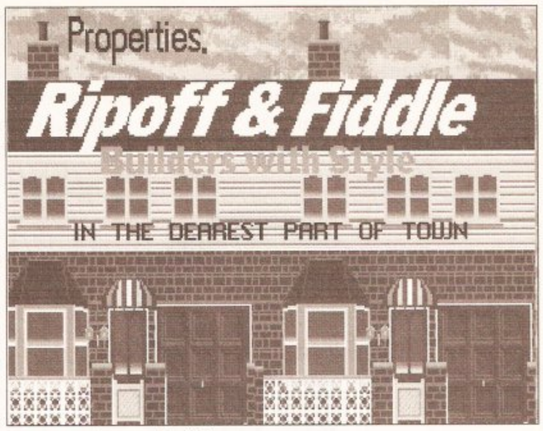


There's no denying that a well-chosen illustration can liven up the appearance of a document. By providing an extra way of grabbing the reader's attention, as well as enhancing the overall appearance, pictures can gain those extra marks that make all the difference between an average grade and an 'A'.

However, we don't all have the time to search for suitable source material, and on top of that, there are problems of copyright. The PD world does offer many possible solutions, but the range of images is not always of the highest order, and, more importantly, the bulk of the images may be irrelevant to your particular needs.

So, this month I would like to introduce you to three quite different forms of professionally-produced clip-art, and show how you can incorporate them into your work.





Above: Hundreds of components are available to construct your own house design
Right: Once I had completed the final design of the terrace for my brochure, I was able to add the wording to complete the finished graphic, all without leaving *DPaint*. The picture was then ready to be installed into a brochure design

Picture This

Stuck for an illustration? Then look no further! Wilf Rees samples some novel developments in the field of clip-art. PLUS: New budget-priced programs reviewed

THE HOUSE THAT I BUILT

Whether for architectural studies, or for developing images of buildings as part of a larger picture, *Housebuilder* from Diskotech offers a huge assortment of various building designs, enabling you to construct a mansion to your own requirements. All of the various components are to the same scale: roof and wall patterns are both colour co-ordinated, and adjacently interlocking, so that continual repetitions of brushes do not show conflicting joints.

Employing *Housebuilder* requires the user to have *DPaint* and sufficient memory to be able to toggle between two screens. As the different files on each section are loaded, you then just collect the appropriate building components, and construct a building according to choice. The permutations are enormous, and, I imagine, should be adequate for anyone.

DES RES FOR SALE

Once the desired building has been constructed, then it can be imported into a different package such as *Wordworth* or *Final Copy*. There it can be incorporated into a brochure design to produce a very professional-looking result. Scaling can be achieved by increasing the page size, or using the brush facility to enlarge the finished product. Should you find that a particular style or design is lacking, then the range of building components can also be extended, either by developing the existing solutions, or designing your own from scratch.

In the example I have produced, I wanted to represent a brochure from a small builder who is advertising a development of mews-type terraced accommodation.

You can see where I have employed the various components to construct the original, then duplicated the first to produce a terrace. From there, the completed image is saved as an IFF file, then imported into my word processing package, where the required text is flowed around it. The components can be used for more than constructing a finished building – they could be used as discrete elements in any graphic, even if related to a different topic.

The easiest way I found to go about drawing my intended row of terraced houses was to work in *DPaint* and use the spare screen (you can toggle between the screens using the 'j' key). I used the main screen as my loading screen, then simply loaded the data off disk, grabbed the desired piece of clip-art as a brush, and moved over to the spare screen. Working this way, I gradually built up the desired image, adding elements selected from the different directories of examples.

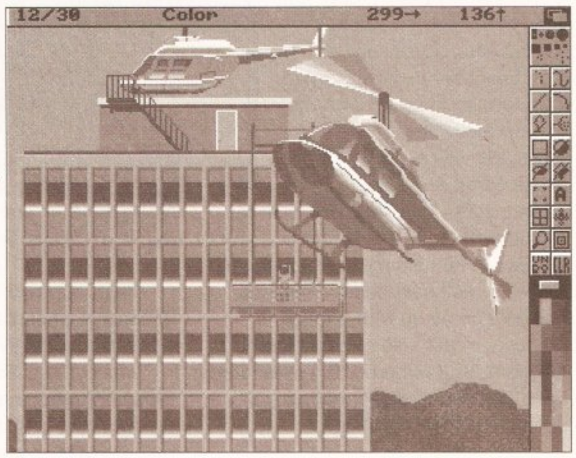
Once the individual image was completed, it was simply a case of grabbing the whole house as a brush, and duplicating the house to create a terrace. You could even flip the brush on the horizontal axis to create a mirror image, thus adding a bit of variety in the overall design.

ON THE MOVE

Also from Diskotech is a range of clip-art with a difference. Under the general banner of *Movieclip*, you'll find a collection of disks which take clip-art further than the usual cut and paste.

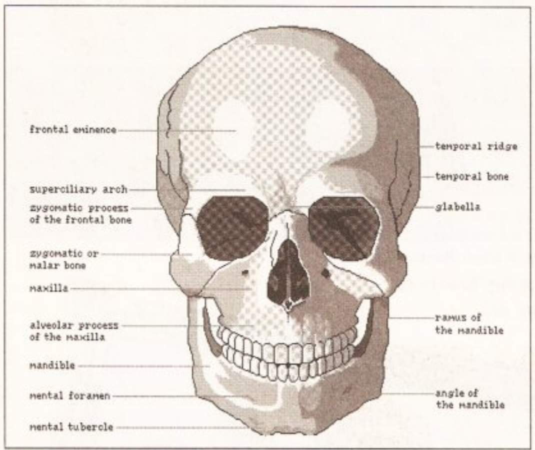
This range of disks contains a series of animated clips for loading into the Anim feature of *DPaint* or *AMOS*. First release titles cover a comprehensive range of modern and period transport (by land, sea, water and air). Each disk is full to the brim and, as well as the ready-made animations, there are also backgrounds against which the animations can be run.

I experimented using the animations against a black background, and also tried superimposing them over a video recording of the Farnborough Air Show. This latter effect was made possible by using a genlock (a device for linking video signals to your Amiga graphics). The result showed a picture of the main runway at Farnborough, with an animation of a



You can stage your own air show with the animations provided as part of the *Movieclip* series

helicopter taking off, hovering, and then flying away into the distance. Combining these two features produces a really strange effect, along the lines of the film *Who Framed Roger Rabbit?*. You could take any of the transport clip-art images and animate the vehicle over the top of a video. Another change you could make is to customise the decals on the vehicle, in order to suit your particular assignment.



An example of the quality of the clip-art on the two *Human Biology* disks from Think Ltd. This beautifully-illustrated example of a human skull is anatomically correct in fine detail, and the major skeletal parts are identified. All of the clip-art is in high-res, so the definition is of the highest possible order, without making your eyes boggle

In our example of an animation created with *Movieclip*, a Ranger helicopter is made to perform various aerobatic stunts. The process couldn't be simpler, as the backdrop is supplied on the disk, and all of the stages in the movements are supplied as clip-art. All the user has to do is:

1. Working with *DPaint*, select the spare screen.

2. Load the desired background.

3. Set the number of frames which are to be used in the animation.

4. Return to the main screen and load the first file.

5. Select the clip as a brush, and swap screens (toggle with key 'j').

6. Plant the first image wherever you wish it to go.

7. Return to the main screen and select the second image as a brush.

8. Swap to the spare screen and place the brush over the first image, using the corner guides provided.

9. Record this as the second animation frame, using key '2'.

10. Continue to repeat this pattern of loading the image files, grabbing them as brushes, swapping screens, and then recording them as animation frames.

When you are finished, simply press key '4' and watch the helicopter take off slowly, hover, and gradually move away.

Remember, it is also possible to change the colour scheme on any of the clip-art, but I really advise you to save any modified material as separate files, and not on top of your original disk.

DOCTOR'S ORDERS

This month's third collection of clip-art is from the same company as my review, which follows this section. Think Ltd produce a range of sophisticated clip-art aimed particularly at science in education.

Entitled *Human Biology*, the package comes as two disks of highly detailed black and white line drawings of human anatomy. These are an absolute must for anyone with an Amiga who is following Biology at GCSE or A level. The same principle applies as for the other examples of clip-art: once you've identified the appropriate image, you simply incorporate it into an assignment.

The two disks cover virtually every aspect of human biology you will ever cover, and just so you can customise them, here is a useful tip. The files come in two versions, one with labels and one without. Try and incorporate the file in such a way as to make it appropriate to the particular topic you are covering. Don't include any label unless it is absolutely necessary, and if you have the benefit of a colour kit on your printer, import the clip-art into your favourite paint package and add colour to the items you wish to emphasise. The secret of a good illustration is that it does exactly what it says, and no more. AS

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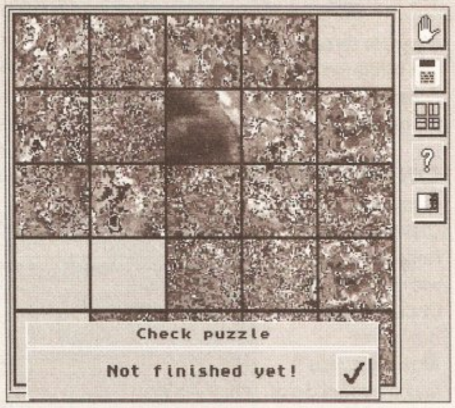
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I THINK THEREFORE I AM

Think Ltd is a Birmingham company which, amongst other things, has recently produced some interesting educational software. Some of you may remember the company's 'Alfred Arm', a very well-built, and extremely useful robot arm used in schools to teach control and related topics.

Think Ltd has since turned its attention to an assortment of other activities. The processor which sat in the base of the Alfred Arm was developed by Think Ltd, and sold by the bucketload to the Inland Waterways to help monitor pollution. However, as I said earlier, Think Ltd has also come up with a range of products in the field of educational software. So I will now do a mini round-up of just two of these modestly priced, but clever packages.



An example of one of the pictures in the *Move It and Slide It!* program

ILLUSTRATED EXAMPLES

Working with Pictures is a series of interactive picture-based puzzles and activities, suitable not only for use in schools, but also as a source of great amusement, (and frustration!) to any age group.

There are two similar packages under this label, called *Move It and Slide It!* and *Jigsaw*.

Move It and Slide it! is based on those annoying puzzles where you have the numbers 1 to 15 mixed in a random pattern around a 4 by 4 grid. By a process of sliding the elements around, you eventually get the numbers in the correct sequence. With this package, instead of numbers you have pictures, and they are in full colour. The user has the choice of deciding how complex the puzzle will be, by determining the size of the grid. It is then a furious race against time to try and complete the puzzle. An on-line help facility allows you to view the completed picture, which believe me is a must if (like me) you have foolishly chosen a 5 by 5 grid. Digitised speech gives you the name of the file selected, and there is a facility for loading pictures of your choice.

Jigsaw is somewhat similar, the principal difference being that instead of sliding the pieces around the grid, they can be pointed at, clicked on, and moved to the desired location. Sounds easy, but when you choose an image from the advanced category, things get rather harder. I went for a close-up digitised picture of a wasp, and this had 64 pieces, which do not appear on the jigsaw itself, but are stacked randomly on the side. Not only that, but most of the pieces were rotated by various amounts, making the task even harder. I don't know why but I found this package compulsive! It took me 35 minutes to complete the puzzle, and believe me, that's about three times longer than most packages manage to hold my attention.

CHECKOUT
MOVE IT AND SLIDE IT!

Ease of Use ●●●●●
Very user-friendly. It's so self-explanatory there's hardly any need for a manual.

Features ●●●●○
It's fun to be able to import your own picture and build your own puzzle.

Documentation ●●○○○
A flimsy photocopied sheet, fortunately not needed as the program's so friendly.

Price Value ●●●●●
Excellent value for money.

Overall rating ●●●●○

A super little package which would be great for first and middle schools.

CHECKOUT
JIGSAW

Ease of Use ●●●●●
A doddle to control. Generally very friendly, and simple-to-use all round.

Features ●●●●○
The facility to reorientate the pieces to make the puzzles more difficult is a nice sting in the tail.

Documentation ●●○○○
Very limited but once again unnecessary.

Price Value ●●●●●
Excellent value for money.

Overall rating ●●●●●

This product would also have a place in any high school.

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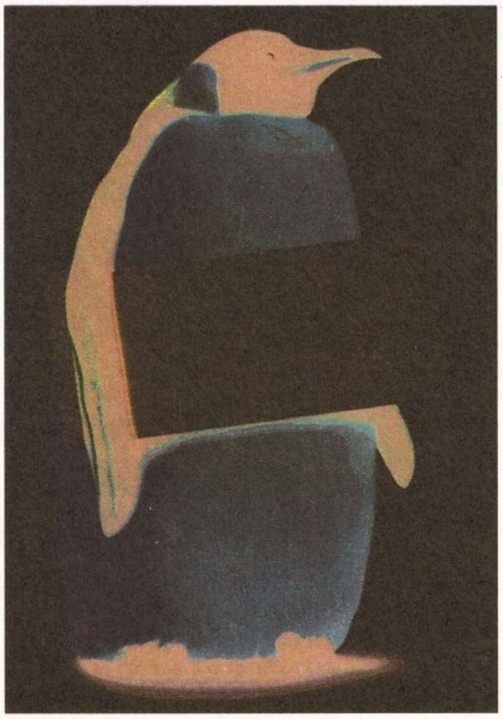
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Last month we looked at the process used to create the Mandelbrot set, and constructed an Amiga BASIC listing to produce the entire Mandelbrot set. This month we'll be looking at alterations to this program which allow us to zoom into sections of the set and also generate variations on the normal Mandelbrot fractal. In case you mislaid (or missed) last month's issue, the program – complete with colour contour generation – is provided again here, as Listing 1.

Close to the edge

The harder you look at the fractals in the Mandelbrot set, the more detail you'll see. Conrad Bessant shows how to wield a mathematical magnifying glass



Figure 1: The small square (arrowed) is the area we would like to examine more closely

ZOOMING IN

The Mandelbrot set is an incomprehensibly complex object: a single plot can never contain enough detail to show all its intricacies. So, the ability to 'zoom' into the set can be very useful.

Let's assume that we wanted to look closer at the section shown in Figure 1. By intelligent guesswork, or by measuring the diagram, it can be shown that the area in question lies in the region where **a** ranges between 0.25 and 0.5 and **b** ranges between 0.5 and 0.75. This is all the information we need to magnify this section, and only three minor alterations need to be made to Listing 1 in order to do it. The first is to make the program only test points in the selected region, rather than in the whole set. To do this the two FOR...NEXT loop initialisation lines should be altered to read as follows:

> ***"magnified to over 100,000,000,000,000,000,000 times its original size..."***

```
FOR a=0.25 To 0.5 STEP 0.01
FOR b=0.5 To 0.75 STEP 0.02
```

This has the desired effect of only showing the relevant area. The pixels are plotted in the same place as before, rather than filling up the whole screen. The movement of the pixels is done by editing the multiplication factors in the PSET line. The relevant replacement for the line is shown below.

```
PSET (a*1600-240,200-(b*800-400))
```

Running the program now will display the right section at the relevant size, but the pixels are too spaced out. This is because the STEPs of the FOR...NEXT loops were optimised for the full Mandelbrot set. Because the height and width of our section is only one-sixteenth the size of the total Mandelbrot the STEP sizes must be correspondingly reduced to fill in the gaps. The revised FOR...NEXT initialisation lines are shown below.

```
FOR a=0.25 TO 0.5 STEP 0.00625
FOR b=0.5 TO 0.75 STEP 0.00125
```

Figure 2 shows the kind of output that you can expect from the altered program. Further enlargements can be created by altering Listing 1 in a way similar to that used to produce Figure 2. It is these kind of enlargement techniques that lie behind all the public domain Mandelbrot 'explorer' programs, where you use the mouse to select the section to enlarge. Such programs work out the step sizes and ranges of **a** and **b** simply from the position of the mouse.

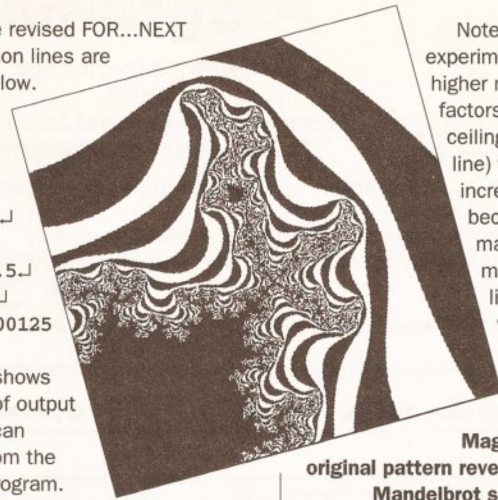


Figure 2: Magnification of the original pattern reveals a self-similar Mandelbrot set lurking within

Note that when experimenting with higher magnification factors, the iteration ceiling (in the WHILE line) will have to be increased from 32, because, at high magnifications, more contour lines become visible. More calculations must therefore be done to distinguish points on the contours from points which actually belong to the 'official' Mandelbrot set (in other words, the black bit in the middle). There is no simple formula for calculating the maximum number of iterations for a given part of the set, because the contours are of varying widths. As a rule of thumb the iteration ceiling has been well chosen if the border of the actual set is free of smooth lines and the set appears on the screen as fast as possible.

LISTING 1 • LISTING 1 • LISTING 1• LISTING 1

```
REM Open a 16 colour window
SCREEN 1,640,200,4,2
WINDOW 2,"Colour Mandelbrot Set",(0,0)-(617,180),15,1
DEFDBL a,b,p,q,pnew,qnew
FOR a=-2 TO 2 STEP .01
  FOR b=-2 TO 2 STEP .02
    REM Set initial values of variables
    p=0
    q=0
    iteration=0
    REM Begin calculation loop
    WHILE (p*p+q*q<4) AND (iteration<32)
      pnew=p*p-q*q+a
      qnew=2*p*q+b
      p=pnew
      q=qnew
      iteration=iteration+1
    WEND
    COLOR iteration MOD 16   'Set the colour
    PSET(320+a*100,100-b*50) 'Plot the point
  NEXT b
NEXT a
```

LOOKS FAMILIAR

There is one other important point to make about magnifying parts of any fractal, which is that the aspect ratio (the ratio of height to width) should always be preserved. This is the reason why the sets plotted by Listing 1 only take up the middle section of the screen. Extending it in order to fill the rest of the available space would cause it to be artificially elongated. Such tampering with the aspect ratio causes inaccurate plots to be produced, making self-similarity hard to distinguish.

The tiny Mandelbrot shape near the centre of Figure 2 clearly demonstrates self-similarity. The tiny replicas of the Mandelbrot shape are thought to be found even when the set is infinitely magnified. At a lecture Professor Mandelbrot exhibited a picture showing a section

of the set magnified to over 100,000,000,000,000,000,000 times its original size, and the original Mandelbrot image could still be seen! It's not worth trying such a large magnification on the Amiga – it would take several years to produce, and besides, the precision of Amiga BASIC's maths routines would mean that the resulting image would be severely distorted.

STRANGE MUTATIONS

Some variations on the Mandelbrot set can easily be generated by altering Listing 1 without any understanding of how the changes relate to the Mandelbrot process. For example, try eliminating the **pnew** and **qnew** variables by replacing the four lines after the WHILE line with the following (if you've just altered the program for zooming make sure you put it back to normal before trying this!):

```
p=p*p-q*q+a
q=2*p*q+b
```

Another 'quickie' can be performed by changing the Mandelbrot square into a circle, by editing the WHILE line to read as follows (this can be used on its own or to enhance the last variation):

```
WHILE (p*p<4) and (q*q<4) ↵
and (iteration<32)
```

In general the results of these kind of trial and error alterations tend to be disappointing. So, It is usually more advisable to have a reasonable idea of what you are trying to achieve before you start tinkering around with the program.

INTERNAL EXAMINATION

Traditionally the inside of the Mandelbrot set is always coloured black, but it is possible to colour the inside of the set with contours similar to those found outside. Although these internal contours are derived from the Mandelbrot process, they have little importance to the study of the set, and are simply included to add visual effect – they can be quite stunning when plotted in colour.

You can use just about any method you like to plot the internal contours, but a popular method involves the distance between the centre of the Mandelbrot circle and the position at which the test point ended up after exiting the circle (see last month for more details of the Mandelbrot process and Mandelbrot circle). The best way to incorporate this facility into Listing 1 is to replace the line which sets the colour to read as follows:

"...included to add visual effect – they can be quite stunning when plotted in colour."

```
IF iteration<32 THEN ↵
   'If outside set...
COLOR iteration MOD 16 ↵
   'select colour normally
ELSE ↵
   'Otherwise...
COLOR INT(5*ABS(LO↵
G(p*p+q*q))) MOD 16 ↵
   'use internal method
END IF
```

QUASI-MANDELBROTS

Quasi-Mandelbrot sets represent one of the largest areas for Mandelbrot experimentation. Normally **p** and **q** are both set to zero before the Mandelbrot process gets under way, but by using different initial values it's possible to create a quasi-Mandelbrot set. Different values can be incorporated into the program by altering the lines in Listing 1 which set the initial values of **p** and **q**, so that these variables are something other than zero. For example, try changing the relevant lines to read as follows:

```
p=0.6
q=0.2
```

The output from the resulting program is shown in Figure 3. These sets are usually quicker to plot than the standard Mandelbrot set. There are a vast number of different quasi-sets that can be created using this method, due to the many possible combinations of **p** and **q**. However, an important thing to remember when experimenting in this way is that both variables should always be in the range of –2 to 2.

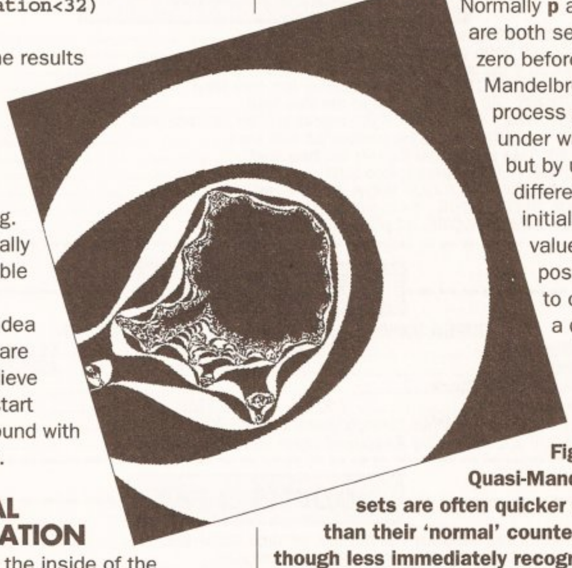


Figure 3: Quasi-Mandelbrot sets are often quicker to plot than their 'normal' counterparts, though less immediately recognisable

TWO HEADS ARE BETTER THAN ONE

Another variation on the set can be achieved by altering the Mandelbrot equations which, recalling last month's article, are as follows:

```
pnew = p*p - q*q + a
qnew = 2*p*q + b
```

A two-headed Mandelbrot set can be produced by replacing these equations with the following pair:

```
pnew = p*p*p - 3*p*q*q + a
qnew = 3*p*p*q - q*q*q + b
```

These two equations are actually very closely related to the original ones, although the relationship is difficult to explain without reference to complex numbers.

The equations for **pnew** and **qnew** can easily be incorporated into a Mandelbrot program such as the one given in Listing 1, and will produce output similar to that shown in Figure 4. If you've just altered the program to produce quasi-Mandelbrot sets remember to restore the relevant lines so that **p** and **q** are both zero initially, or you will end up with something very weird!

All the mutations discussed here can be manipulated and zoomed into using the same method as for the normal set. Although the more complicated calculations slow the program down, this is still an area worthy of experimentation. It's worth attempting to convert the listing to GFA BASIC or C if you can't stand waiting for Amiga BASIC .

A TOUR OF CONTOURS

So far we have restricted ourselves to plotting the Mandelbrot set in the standard two-dimensional way, with only the addition of coloured contours breaking the tradition of Mandelbrot's original plots. However, there are many other ways to observe the set. The first of these is to plot the contours in a more map-like style, using thin monochrome lines rather than wide bands of colour. This produces an illustration reminiscent of a slightly 'anaemic' Mandelbrot set

A set of this type can be created by altering Listing 1 so that instead of colouring points depending on the ease with which they left the Mandelbrot circle, lines are plotted to show the boundaries between these groups. By far the easiest way to do this is to plot the Mandelbrot set in colour first and then use a pair of FOR...NEXT loops to scan the completed image, applying Amiga BASIC's POINT function to pick out each of the boundaries between the coloured contours.

ANOTHER DIMENSION

Using colours alone it is difficult to ensure that each contour around the Mandelbrot set is a unique colour. So, it would be useful to have another way of representing these contours. A popular method for doing this is to draw an isometric three-dimensional Mandelbrot, known as a Mandelbrot landscape, where points are elevated from the plane by differing amounts depending on the ease with which they left the circle. Unfortunately a knowledge of 3D graphics programming is required before you can attempt a Mandelbrot landscape program, and there isn't room to explain 3D techniques here. However, watch this space for more details when we cover fractal landscapes later in the series.

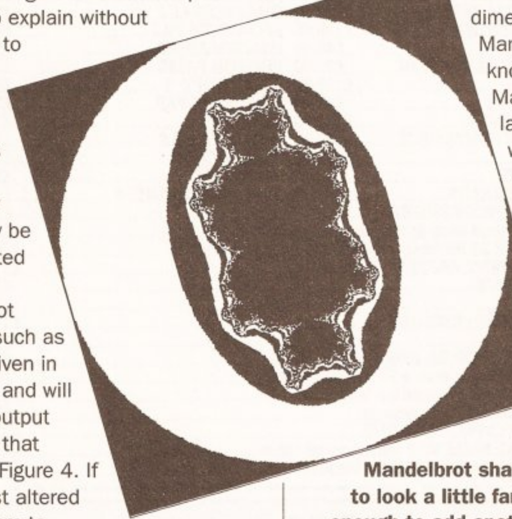


Figure 4: If the standard Mandelbrot shape is beginning to look a little familiar, it's easy enough to add another 'head' to it

So far we've seen how the standard Mandelbrot set can be manipulated. Following on from this, next month we'll be looking at the Julia set, the ultimate variation on the Mandelbrot set.

More details on the Mandelbrot set and other fractals can be found in Conrad Bessant's forthcoming book,* Chaos and Computers: Amiga Edition *(ISBN: 1-85058-283-1), published by Sigma Press. Call Sigma on ☎ 0625 531035 for an information sheet.

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AMOS ACTION

Stuffed with Christmas turkey and generally the worse for wear, Jason Holborn enters 1993 with a bang. If you got a copy of AMOS for Christmas, then join the 'in crowd' with AMOS Action!

Ugh! Christmas comes but once a year and how glad I am that it's all over. Having downed more wine, turkey and Christmas pudding than is generally regarded as safe, the old stomach is bulging and my head still hasn't stopped spinning. But despite all this over-indulgence (perhaps better known as 'gluttony'), my Amiga hasn't been ignored. Even on Christmas day, *AMOS Pro* was up and running. So, let's put *AMOS Action* straight into top gear (without breaking the speed limit, of course!) and move smoothly into the New Year.

1993 really should prove to be a wonderful year for *AMOS*. With *AMOS Pro* riding high in the popularity stakes, more and more Amiga converts are sure to enter the fold. This year we can also look forward to some extremely exciting new releases for *AMOS* programmers. Now that the Amiga 1200 and – for the posers amongst you – the Amiga 4000 have delivered the new 'AA' chip set to the Amiga community, it's only a matter of time before a new version of *AMOS Pro* arrives that boasts full support for those wondrous new screen modes. As exclusively reported in last month's *AMOS Action*, *AMOS* programmer Francois Lionet is also hard at work on the new release.

> **"1993 really should prove to be a wonderful year for AMOS"**

February should also see the release of the new *AMOS Pro Compiler*, a very sexy piece of software that I'm personally looking forward to. Having already coded loads of programs that take advantage of *AMOS Pro's* extra facilities, it'll be nice to be able to run those programs without having to load *AMOS Pro* every time. Don't hold your breath for the compiler though – my guess is that it'll probably take a little longer to arrive than Europress is actually letting on. Let's hope that I'm proved wrong.

SOLID ADVANCES

Although Europress won't spill the beans, I'm quite sure that we'll also see a new version of *AMOS 3D* too. As bemused *AMOS Pro* programmers will already know, Voodoo's excellent 3D extension doesn't quite work under *AMOS Pro*. Europress (being the caring sharing company it is) is sure to do the decent thing and upgrade *AMOS 3D* in double quick time. It would certainly be a great shame if this doesn't happen – I still think that *AMOS 3D* is one of the most underrated Amiga packages ever released!

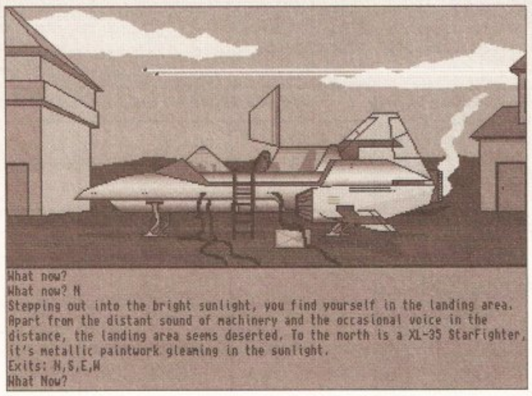
Don't be surprised either if you see *AMOS* eventually ending up in a Commodore bundle. I've been saying it for months now and I still think that Commodore will see the light

GAMES PROGRAMMING

•–•ADVENTURE GAMES•–•

We've covered quite a few different types of games in the *AMOS Action* section over the last few months. Having already discussed shoot 'em ups, maze games and *Dungeon Master* clones, we move on this month to that old faithful, the adventure game. Adventure games have been very popular for more years than I dare to mention, thanks mainly to pioneers such as Infocom and Magnetic Scrolls. Several adventure game construction kits appeared on the 8-bit machines a couple of years back, but they failed to materialise on the Amiga despite a quick foray into the ST market.

The nearest that Amiga users have to programs such as Incentive's *Graphic Adventure Creator* (*GAC*) and QuillSoft's *Professional Adventure Writer* (*PAW*) is Aegis' *Visionary*, a language designed specifically for adventure game programming. Unfortunately it never quite achieved what its designers had aimed for, mainly due to the rather long-winded approach it took towards programming. But fear not: writing adventure games with *AMOS* is actually very straightforward indeed. What's more, you can even include graphics, sound effects and animations (if you're lucky enough to own *AMOS Pro*) within your adventure games – try doing that with *GAC*!



You too can write adventure games – this one was knocked up in a day!

CLASSY ACT

The heart of every adventure game is a routine called a 'parser'. The parser's job is to interpret the commands that the player enters at the 'What now?' prompt and then act accordingly. Now, computers can't understand English as we do, so it's the parser's job to bring some form of intelligence to the machine. Although it's a far cry from true artificial intelligence, the parser gives the machine the ability to act upon a limited range of English sentences.

The parser works by assuming that each and every sentence that you enter will have a strict format. It's a bit like writing a programming language – because every command has its own unique format that the programmer is expected to stick to. The parser also imposes this limitation. For example, if the parser were to be passed a sentence starting with the word 'Attack', it knows that it should also be passed three other parameters – the name of the object or person being attacked, the word 'with' and finally the object to be used for the attack. Here's a valid example sentence:

What now? Attack elf with sword

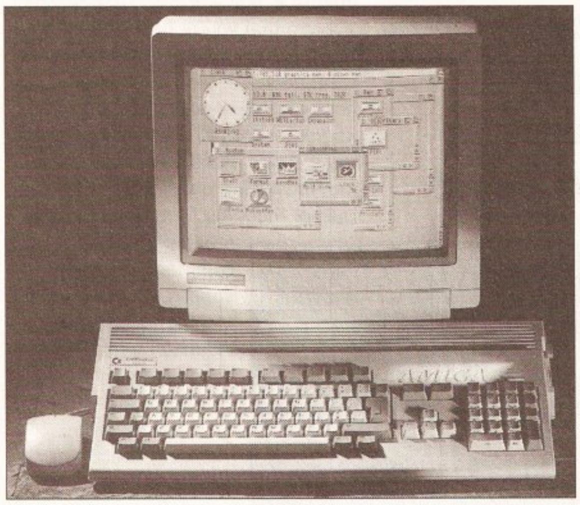
and will snap up *AMOS* for an Amiga bundle. Hordes of Amiga users have been moaning at Commodore since the long-overdue demise of AmigaBASIC (RIP), so Commodore would be well advised to provide new users with a language that will allow them to get the very most from their new machine. And what better a language than *AMOS*? Mark my words, it will happen.

Of course the most exciting aspect of 1993 has to be the twelve issues of *AMOS Action* that await you over the coming months (one of which you're reading now). If you want to know what's hot, what's white hot and what's not so hot (try saying that after a few beers!), then stick with us.

TOTALLY RAD!

If Santa dropped a copy of *AMOS Pro* in your stocking, then no doubt you'll be thirsty for as much *AMOS* knowledge as your brain can absorb. One of the best sources of *AMOS*-related news, features, programming tips and programs (apart from *AMOS Action*, of course) is Len Tucker's *Totally AMOS*, the latest issue of which is now out and about. Issue 7 offers the same mix of *AMOS* source code, tutorials and other bits and pieces, all of which are written by some of the most knowledgeable chaps and chapesses in the *AMOS* world. The latest issue also has source code for a complete maze game, based around my article in Issue 20 of *Amiga Shopper*. If you're still a little puzzled about the rather techie subjects that we covered in that issue, then the source code in *Totally AMOS 7* will hopefully make things a little clearer.

Totally AMOS is available from the Tucker partners (alias Len and Anne) who can be contacted at 1 Penmynydd Road, Penlan, Swansea, West Glamorgan SA5 7EH.



1993 will be a big year for *AMOS* and the Amiga – look out for a new version of *AMOS Pro* that supports the AA chip set

GOING UNDERGROUND

With the threatened closures of many of Britain's coal mines hitting the mining industry, four miners in South Wales have opened up their own colliery using the redundancy pay awarded to them by British Coal. In an attempt to keep costs down, they've abandoned modern technology in favour of a pit-pony called 'Amos' that is used to bring the coal to the surface. Well, all this just goes to prove that *AMOS* can be used for anything!

YOUR PAGE NEEDS YOU

So you lot out there in Amiga-land think you're pretty smart huh? Well, now's your chance to prove it. Every month I'll be running a little competition within these pages that will give you the chance to prove just what talented programmers you really are. There are no prizes involved, but at least you'll have the satisfaction of seeing your code and – even better – your name featured within these pages. Just think: massive prestige and programming fame could be yours!

The basic idea is to pick one of the two programming projects detailed below and then code an *AMOS* procedure that will do the job (it must be a procedure so that readers can easily incorporate it into their own programs). Don't forget that your procedures must be both readable and as small as possible – anything more than 30 lines of code is way too big! It's no good relying on external files or banks either – the code that you write must run perfectly when typed in straight from the magazine. (However, I will allow calls to bank or picture files on the *AMOS* disks.)

Once you're totally happy with the results, pop them on a disk to: Jason Holborn, *Amiga Shopper*, 30 Monmouth Street, Bath BA1 2BW. Here's this month's procedures for you to choose from:

1. Star Field: The Star Field procedure must be very smooth, use hardware sprites (so that bobs can be pasted over the top of the star field), should run on any screen (so don't open up the screen from within

> ***"massive prestige and programming fame could be yours!"***

the procedure) and should have stars scrolling by (from right to left) at different speeds, giving a sort of 'parallax' effect.

2. Infinite Bobs: Quite a few readers have noticed that *AMOS* can slow considerably when more than a couple of bobs are moved around the screen. *AMOS* Demo programmers have managed to beat this though, so I'd like to see a procedure that demonstrates how to move lots of bobs around the screen (at least 50!) smoothly and at high speed.

The parser would start by breaking the sentence down into a series of single words held within a dimensional array. In this case, the array would contain four words: attack, elf, with, sword. Once the sentence had been broken down into these constituents, the parser would then check the first word in the sentence to see what the player is trying to do.

In an average adventure game, there might be as many as fifty or more commands, but you could probably get by with a fairly minimal selection to start off with – go, examine, attack, get, drop, use and other such essentials.

The parser would then check the first word within the dimensional array against the list of commands supported by the parser. If it failed to find a command that matched the first word the user entered, a message reading something like 'You what?' or – for the cultured among us – 'I do not understand' would be displayed and the parser would return to stage one with the usual 'What now?' prompt.

RECOGNISE THE EXERCISE

However, once it had recognised the first word, the parser would then jump to a routine dedicated to handling that particular command. In the case of the example above, you'd have a procedure that handled the 'Attack' command. The next stage would be to check the second word in the dimensional array against a list of characters, which would include all the various people and monsters depicted in the adventure.

This array would contain two sets of information – the name of the character and its location within the game. If the parser managed to find a character that matched the description given by the user, it would then check to see whether that character was in the same location as the player. If it wasn't, then the parser would display a message that informs the player that the character they've just tried to attack isn't in the current location.

Once the parser has managed to recognise and accept the character that's being attacked, it would then skip to the fourth word to see what the player is trying to attack the character with (you can usually take it for granted that the third word is 'with'). The object would then be compared against a list of objects held by the player (the player's inventory). If the player doesn't have that object, then an error message would be produced. If the player does have that object, then fierce combat would commence.

UNTO THE BREACH

The combat routine used by an adventure game doesn't have to be particularly complicated. All you need for this procedure are three sets of variables that determine the abilities of the player and the character which the player is trying to attack. These abilities could be hit points (the number of lives the player or character has before they kick the proverbial bucket); strength (how much damage the player or character will inflict if they manage to hit their opponent successfully); and an agility rating (how quickly the player or character can move out of the way of incoming blows).

Combat would start by calculating the probability of the player or character managing to hit their opponent. Let's presume, for the sake of example, that the player has a 3 in 10 chance of landing a successful blow. You would then start by generating a random number between 1 and 10. If the result was higher than 3, then the player's attack was unsuccessful. But if it was 3 or less, the combat routine would then deduct the player's strength rating from the number of hit points that their foe has. If the character being attacked has a hit point rating of 0 or less, then they are dead. If they still have hit points though, you could then perform the same operation in reverse – the character attacking the player.

Once both the player and the character have attacked each other once, combat would cease until the player decided to attack the character again. If you were feeling really adventurous, you could extend the combat routine so that it takes some form of bravery rating into consideration – if the character was a

AMOS ANSWERS

Jason Holborn, our resident AMOS doctor, hacks his way through your AMOS problems in the largest Answers section ever!

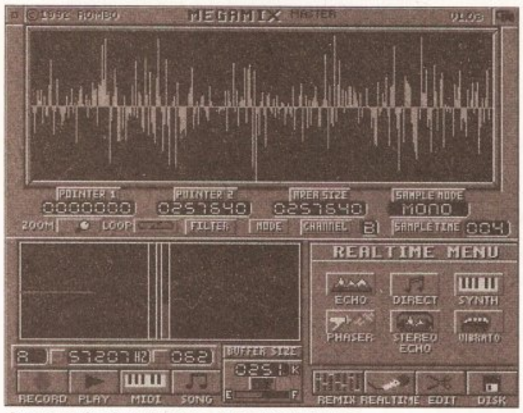
BACK ON TRACK

I am presently writing a shoot 'em up game in *AMOS* but I'm having some difficulty with the sound. I want to be able to have sound effects and music playing simultaneously by splitting the four channels – channels 1,2 and 3 for music and channel 4 for the sound effects. I have already written a selection of tunes using *ProTracker 2.2* using just the first three channels. However, when I attempt to load up the tune into *AMOS* and then play a sound sample as well, all I get is distortion and crackles. Here's my code:

```
Track Load "Mod.GroovySong",6
Track Play 6
Voice %0001
Wait 50: Boom
```

Even when using *Amos Pro* (which is brilliant), the same thing happens every time. Do I need a new Sound Tracker program? Is *AMOS* actually capable of playing both music and sound effects simultaneously? I understand that there are also several 8-channel Sound Trackers available (*OctaMED*, for example). Will I be able to get the 8-channel modules from these programs to work with *AMOS Pro*?

David Shattu
Chiswick, London



Anyone feel up to the job of writing a routine that will allow *AMOS* to read data from a sound sampler?

There's a simple explanation for the problem that you're having, David. *AMOS Pro* (and indeed *AMOS* version 1.34) provides two methods of incorporating sound tracks into your programs: the old and faithful **MUSIC** and the new **TRACK** commands, both of which are designed to play 'tracker modules. Unfortunately, the standard **MUSIC** command doesn't support Sound Tracker Module format (the industry standard for modules), so Europress enhanced the sound system by including direct support for Sound Tracker (and hence *Protracker*) modules via the **TRACK** commands. The **TRACK** commands are very easy to use, but they have one major limitation – they take over the Amiga's sound hardware. You cannot therefore play sound samples and a module simultaneously if you decide to play the module using the **TRACK PLAY** command.

What you need to do is to convert your modules to *AMOS* Music Bank format using the utility on your *AMOS* program disk and then play it using the **MUSIC** command. You will then be able to play a music score and sound samples simultaneously.

Unfortunately, the current releases of both *AMOS* and *AMOS Pro* do not support 8-channel Sound Tracks and it is unlikely that they will unless a third-party developer brings out an extension. Playing 8-channel modules is a big drain on processor time, so it would be virtually impossible to play a module of this type and keep your game or demo running at full speed. Just watch the decrease in speed when *OctaMED Pro* switches to 8-channels!

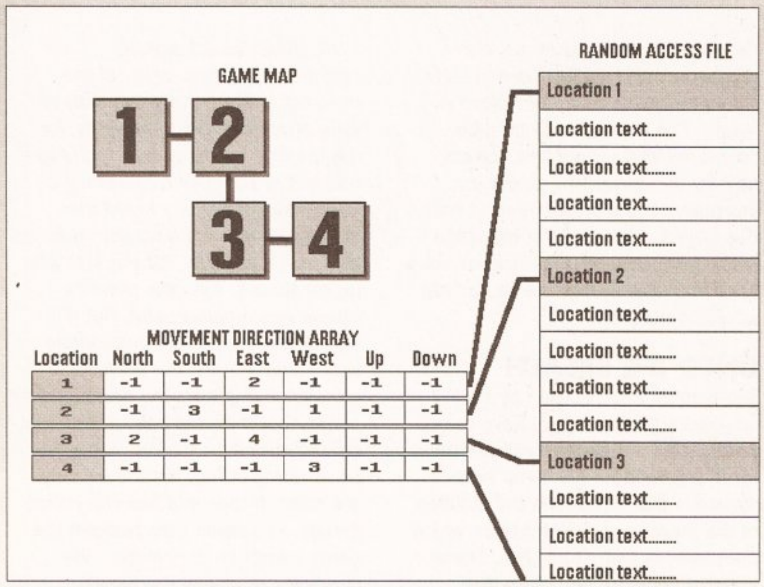
FREAKY, MAN

I want to write a 'Sound To Light' routine in *AMOS*. I've written the code to display the 'lights', but I can't get *AMOS* to read the sound from a sampler connected via the parallel port. I am using a *Trilogic Stereo Sampler Mk 2*.

continued on page 86

HELP! I NEED A HOLBORN

Every month our very own *AMOS* genius *(who, me? – Jason)* answers your *AMOS*-related problematic prose within these very pages. If there's an aspect of *AMOS* that is troubling you, then send your letters to Jason Holborn, *Amiga Shopper*, Future Publishing Ltd, 30 Monmouth Street, Bath, Avon BA1 2BW.



By assigning a number to each map location, movement can be controlled simply by interrogating the attributes associated with each location. The location number could also be used as an index number for extracting the location text from a random access file held on disk

total coward, you could give it the option of running away from the player. However, If it were a brave warrior, it would charge in with axes flailing. In this case, the mighty combat would not cease until either the player or the character were dead, irrespective of whether the player had chosen to engage in battle or not.

ON LOCATION

Taking a few steps backwards, let's take a look at how the adventure game locations are stored and how movement around those locations is handled. The best way to store them is to have a dimensional array that acts as an index for a random access file containing the descriptive text for the locations. Each entry within the dimensional array would contain information on a single location within the game. In turn, each location would contain six different attributes associated with it, one for each direction of movement (north, south, east, west, up and down). Each of these attributes would contain a number representing the location that the player will move to if a particular direction is selected.

Say, for example, you were in location 10 and you wanted to move east. The program would start by checking the attribute for the current location that contained the number of the location for an eastward movement. If it contained anything other than –1 (which would denote that movement was not possible in that direction), then this value would become the new current location, the text for that location would be pulled in from the random access file and the whole process would start again.

SET PARSER TO STUN

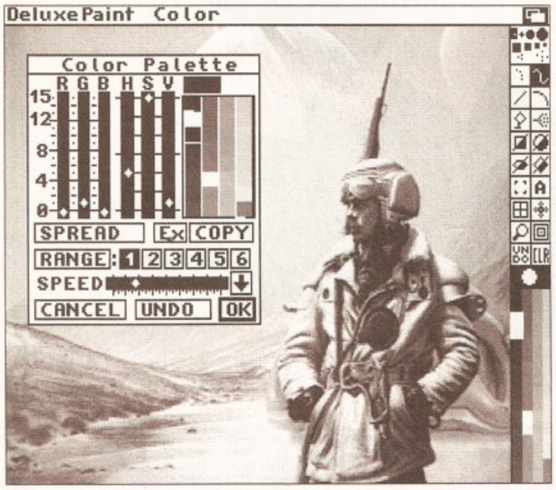
Anyway, enough of the theory – let's get stuck into some code. The first routine we need before we can start coding the parser is a routine that analyses the text entered by the user and then splits it up into individual words. Many programming languages offer such a facility as standard, but not *AMOS*. We must therefore code our own. The routine which you'll find on the following page is called **SCANF** and is actually one I wrote years ago for just this task. It's very heavily geared towards adventure games, so it's not really designed as a general-purpose routine like its namesake **scanf()** in the C language. In fact, the only reason why I decided to call it **SCANF** is because, having spent years working on Unix systems, C has become my second programming language.

continued on page 86

continued from page 84

I've managed to open the port with the Open Port 1,"PAR:" command which works OK. However, when I read from the port using a command such as Input #1,S, nothing happens. How can I read the values sent down the parallel port by my sampler?

Simon Eastop
Pembrokeshire, Wales



It is possible to run external programs such as *DPaint* from within your *AMOS* programs

I'm afraid it's not possible to read data from a sound sampler via *AMOS* unless you're prepared to get involved in some pretty heavy hardware-based programming. I'm prepared to be proved wrong though – so if any of you talented *AMOS* programmers out there fancy writing a procedure that will do the job, then I'd love to see it. I'll even send a mystery prize to the lucky programmer that gets their code printed in the magazine!

MENU MADNESS

I am writing a menu program in compiled *AMOS* which I would like to install into the startup-sequence of my hard drive, enabling me to select and run any of the programs stored on my drive. The program works fine for other compiled *AMOS* programs but when I attempt to run other programs (*DPaint*, for example), the program crashes. I am using the standard Run "ProgramName" command to execute the relevant programs.

I would also like to return back to the menu once the selected program has been quitted. Can you please help?

Mr M Martin
Moreson, Swindon

The **Run** command isn't designed to handle programs other than those produced by *AMOS*. Technically it shouldn't therefore handle compiled *AMOS* programs, but my guess is that you're not compiling them as Workbench programs, but as compiled *AMOS* code. The **Run** command is used simply to 'chain' together *AMOS* programs when memory becomes a little tight. What you need is the **Exec** command which is available in version 1.34 of *AMOS* and *AMOS Pro*. For example:

```
Exec "DH0:DPaint","CON:0/0 ↵
/200/100/Running DPaint..."
```

would run *DPaint* (you'll have to alter the pathname if *DPaint* has been installed somewhere else).

To run your menu in the background, use the **AMOS TO BACK** and **AMOS TO FRONT** commands to switch screens. Running both the menu and the 'launched' program will eat up lots of RAM, especially if your *AMOS* menu program uses a lot of graphics.

QUEST FOR KNOWLEDGE

I am currently writing an adventure game in *AMOS* with thousands of locations. I was thinking of doing this by painting the map with *Deluxe Paint* using different colours to represent the different map features – one colour for the woods, another for castles, and so on. *AMOS* would then check the colour of the pixel representing the player's present location to ascertain the setting they are standing in. How do I read the colour of a pixel on a hidden 64-colour Extra HalfBrite screen?

Also, do you know of a public domain samples disk which is not dedicated to contemporary music? I'm especially interested in lute and lyre sounds.

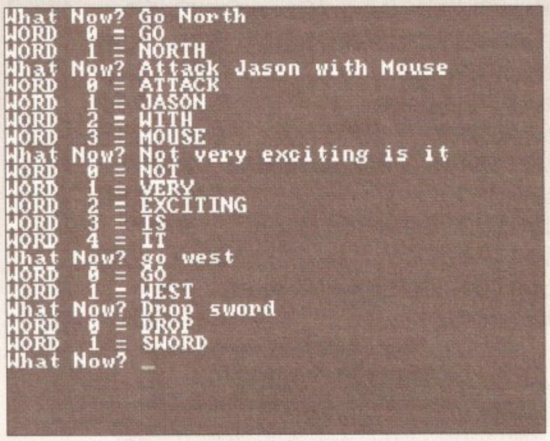
Phillip L Henry
Earls Court, London

You're making life very complicated for yourself, Phillip. Instead of using up valuable Chip RAM by holding a 64-colour image in memory, try a 2-dimensional array like in Issue 20 of *AMOS Action*. It would then be considerably easier to extract the information you required and it would also eat up considerably less RAM. You could fill in the map data simply by writing different values into the array (1 for woods, and so on).

A classical samples disk, eh? I must admit that I haven't seen one in the PD libraries, but they are available commercially. However, your best bet would be to sample the instruments yourself from classical music recordings. Try MicroDeal's new *Rave Sampler* – which costs just £19.95 and is available direct from Microdeal on ☎ 0726 68020.

NEXT MONTH ● NEXT MONTH ● NEXT MONTH

Next month we'll be continuing our look at adventure games by adding the code that controls movement within the map. Beginners can also look forward to the return of our ever-popular *AMOS For Beginners* section. It's all just one month away, *AMOS* fans – can you bear the wait?



OK, so it's not very exciting, but the SCANF procedure is a very important part of an adventure game parser

continued from page 84

All you do is define a dimensional array that can hold the words that the **SCANF** procedure extracts. This must be defined at the very start of your program and then defined as a global array, therefore allowing any procedure to access the words stored within it.

The procedure expects to be passed the string containing the user's input. It then searches through the string for spaces and characters. If a character is found, then it appends it onto the end of a variable called **WORD$**. However, if a space is found, the routine assumes that the word is complete and therefore writes it into the dimensional array. The **WORD$** variable is then cleared and the whole process continues until every character contained within the string has been analysed.

All the code contained with the **Do...Loop** structure can be ignored. I've included this loop simply to provide a quick and easy way of testing that the **SCANF** procedure is successfully stripping down the string and passing the words back correctly. Type it in if you want, but don't expect anything particularly riveting – the exciting stuff will be covered next month! AS

THE SCANF ROUTINE

```
Dim COMM$(5)
Global COMM$()

Do
Input "What Now? ";CMD$
_SCANF[CMD$]
COUNT=Param

For A=0 To COUNT
Print "Word ";A;" = ↵
";COMM$(COUNT)
Next A
Loop


' *** SCANF - Strips a ↵
string down
' *** into single words

Procedure _SCANF[CMD$]
WORD$=""
WORDCOUNT=0
SENT$=Upper$(CMD$)

For COUNT=1 To Len(SENT$)
If Mid$(SENT$,COUNT,1)=" "
If WORDCOUNT<5
COMM$(WORDCOUNT)=WORD$
WORD$=""
Inc WORDCOUNT
End If
End If
If Mid$(SENT$,COUNT,1)<>" "
WORD$=WORD$+Mid$(SENT$, ↵
COUNT,1)
End If
If COUNT=Len(SENT$) and ↵
WORDCOUNT<5
COMM$(WORDCOUNT)=WORD$
End If
Next COUNT
If WORDCOUNT=5 Then Dec ↵
WORDCOUNT
End Proc[WORDCOUNT]
```

CRACKING the shell

In the first part of a two-part special Mark Smiddy reveals some of the hidden extras added to AmigaDOS 3. Plus: a handy new way of swapping directories

Rumours have been circulating which suggest there is no difference between Workbench 2.1 (as supplied with late model A600 machines) and Workbench 3.0, as supplied with the new A1200 and A4000 systems. But this is not true. Although Workbench 3.0 will require the new ROMs to run, its advantages go beyond support for the new graphics modes.

Several new commands have been added, others enhanced and others, like *DiskDoctor*, removed. This latter one is an interesting change: Commodore's official developer documentation sardonically notes: "DiskDoctor: removed for malpractice." It goes on to say the program has been replaced by *DiskSalv* (an original PD disk repair program from Dave Haynie) but on early distribution disks shipped with the A1200 there is no sign of it. It is possible this has been done while the program is being updated pending filing-system revisions, but it might be an unfortunate oversight.

> *"there is certainly more to Workbench 3.0 than pretty colours"*

ASL OF A LOT BETTER

Whatever the case there is certainly more to Workbench 3.0 than pretty colours. The ASL file requester has been updated considerably and now displays an AppWindow. AppWindows are, like AppIcons, new features introduced from Workbench 2 which are now starting to percolate down to user level. (In Workbench 2, only *IconEdit* featured an AppWindow.)

AppWindows are controlled by Workbench and work like this: when an icon is 'dropped' into an AppWindow, the application receives a message from Intuition containing a description of that icon. When a disk, drawer or project icon is dropped into an ASL file requester, the icon's path and file become the current settings. As with all things WIMP, this sort of thing is better tried than explained in more detail.

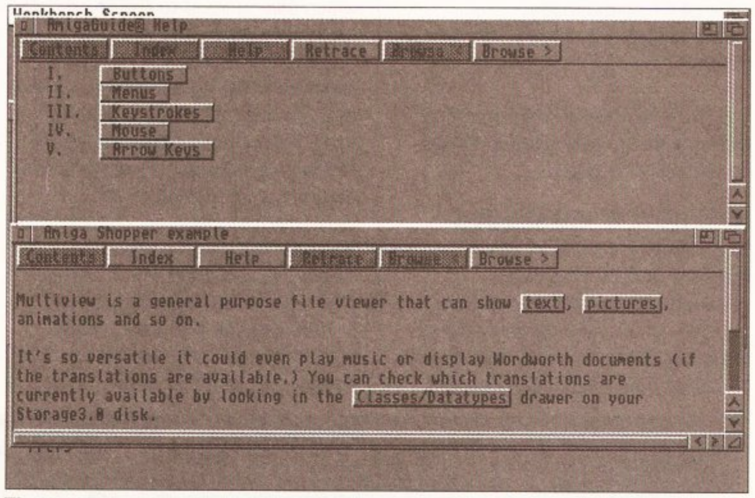
HIDDEN EXTRAS

Commodore is well known for its inability to document the Workbench and its associated systems – and one of those new hidden features appears to be *Multiview*. This is basically a file viewer, similar to the *Display* found in previous releases – but there's more to it than a casual gander might suggest. *Multiview* could feasibly read and display any Amiga file from any application! The secret is a set of software-based translators, called datatypes, which work along similar lines to the existing printer drivers. The command's synopsis looks like this:

```
Multiview [FILE=<filename>]
[CLIPBOARD] [CLIPUNIT=<nn>]
[SCREEN] [PUBSCREEN=<screen
name>] [REQUESTER] [BOOKMARK]
[FONTNAME=<font>]
[FONTSIZE=<nn> [BACKDROP]
[WINDOW]
```

At first the list of options looks far more confusing than the older file viewer, *More* – but this is necessary to harness the power of this terrific piece of software. For example:

● To open *Multiview* and ask it to provide a file requester:
`1>Multiview`



The general purpose file viewer doubles as a powerful hypertext system. The two windows show *Multiview* multi-tasking

MULTIVIEW'S OPTIONS IN FULL

FILE – The name of the file to open. This argument is optional, and if not supplied, *Multiview* will provide a standard file requester.

CLIPBOARD/S – This switch overrides the FILE argument and displays the contents of the Amiga's system clipboard. CONCLIP does not store a file in CLIPS:, but *Multiview* does – under the name 0:
`1>Multiview clipboard`

CLIPUNIT/K/N – The number of the clipboard unit (clipboard.device specific) to use – which must be a numeric argument in the range 0-255. Not usually required unless you want to override the default clipfile. In the current release, the output clipfile (when copy is used) is always CLIPS:0. For example:
`1>Multiview clipboard ↵`
`clipunit=5`

SCREEN/S – If this switch is supplied, *Multiview* will open on a custom screen. The number of colours and screen type is controlled by the file being displayed.

PUBSCREEN/K – Open *Multiview* on a 'public' screen. Currently the only public screen in the system is Workbench. Normal custom screens (supported by most programs) cannot be used. This argument is a keyword and must be supplied along with any argument.
`1>Multiview HELP:DOSHelp ↵`
`PUBSCREEN=AmigaDOS`

REQUESTER/S – This switch may be used in scripts to ask *Multiview* to communicate messages via requesters rather than to the current console (the Shell window):
`Multiview REQUESTER`

BOOKMARK/S – Use a bookmark file if one has been created:
`1>Multiview BOOKMARK`

FONTNAME/K – When viewing text, this keyword can be used to override the default system font. Unlike the Shell, *Multiview* does support Compugraphic (slowly) and proportional bitmapped fonts:
`1>Multiview HELP:DosHelp ↵`
`FONTNAME=Times`

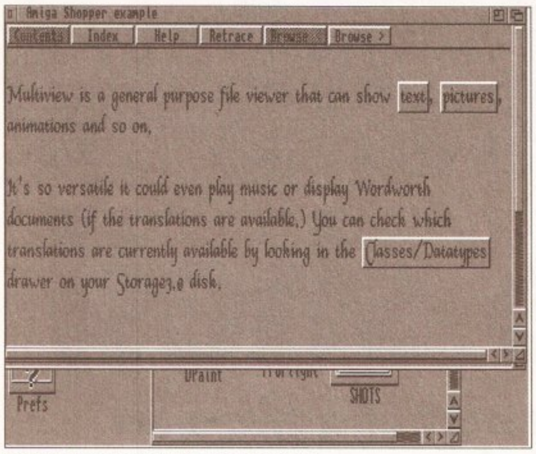
FONTSIZE/K/N – Used in conjunction with the FONTNAME keyword, this allows you to select the font size. If the requested size is not available, the nearest value is used:
`1>Multiview FONTNAME=Times ↵`
`FONTSIZE=18`

BACKDROP/S – Open a text file on a backdrop window. This option looks very professional on custom screens. The menu bar is hidden by default:
`1>Multiview S:Startup- ↵`
`sequence SCREEN BACKDROP`

WINDOW/S – Somewhat mysteriously, this seems to have no function in this release.

- To open the file S:Startup-sequence using *Multiview*:

```
1>Multiview S:Startup- ↵
sequence
```



Making a change: here we see a completely far-out type style used in place of the boring system font

- To view an IFF picture using the workbench screen:

```
1>Multiview Picture1.IFF
```

- To view an IFF picture using the internal IFF screenmode:

```
1>Multiview Picture1.IFF ↵
SCREEN
```

The remainder of the command line options are described in the box on the previous page.

MULTIVIEW GRAPHICS

Multiview has a minimal set of graphics features, although – unusually – it can dither a picture into the number of available colours. Generally speaking, *Multiview* should be called from AmigaDOS with the **screen** parameter set so you can show an IFF picture in all its glory.

For some modes (not HAM for instance) it is possible to extract an area of a picture and copy it to the clipboard. This is accomplished by selecting MARK from the menu, drag marking an area and COPYing to the clipboard. The file is transferred to the CLIPS: assignment as an IFF brush, overwriting any previous contents. It is interesting to note here that, even if a picture is clipped on a four-colour workbench screen it retains all its normal colour and palette information.

MULTIVIEW HYPERTEXT?

Commodore has included an Amigaguide translator with the core system software. Amigaguide is an object-oriented hyperview system which can be used to create complex help systems for just about anything.

Add to that the possibility this could be linked to any Intuition object and you have a system similar to that introduced by Apple for the Macintosh's *System 7*. That topic is something for the future and for developers to muse on. However, the inclusion of a simple hypertext engine is something which cannot (and should not) be overlooked.

Amigaguide has a very small command set – nothing like as complex as BASIC or even AmigaDOS so the core commands (see above) can be learned in a few moments. Amigaguide help databases do not require any special tools – and the files can be created with simple text editors such as *ED* or *MEMACS*.

One cautionary note here: Amigaguide is capable of computing the line-wrapping for any font and size. This means paragraphs must be terminated by a single carriage return, and not separated as a set of lines. *ED* will break lines for you and these 'hard-breaks' must be removed before Amigaguide gets hold of the text. As a general guide (if you must use *ED*), enter the text and join split lines with the **[ESC]-J** command before processing the text.

To get you started, I have compiled a very simple Amigaguide database. Store this as S:MV_Example and view it using the following command:

```
1>Multiview S:MV_Example ↵
backdrop screen
```

Rather than provide a blow-by-blow description of the example database, I'll look at how a database is constructed – this should help give you a better understanding of how to make your own.

The first line of an Amigaguide database must start with:

```
@DATABASE
```

This tells *Multiview* that the file is an Amigaguide database and not just a normal ASCII text file. The command does not take any arguments (although Commodore's example help file does contain a version string).

The next line can be blank, a command or the first 'node'. For most databases, you will want to switch on automatic paragraph formatting with the **WORDWRAP** command. The first node – which must be called **MAIN** – is also used as the contents screen when an Amigaguide database is opened by

AMIGAGUIDE'S CORE COMMANDS

LINK xxx – Embeds a hyperlink button in the document.
@{...} – Defines a hyperlink button.
@DATABASE – The first line of an Amigaguide document (more correctly called a database) must begin with this command.
@ENDNODE – Terminates a 'node' subroutine or hyperlink.
@HELP xxx – Optionally defines the name of the node to be used as the Amigaguide 'help' node.
@INDEX xxx – Defines the name of the index node. Optional.
@NODE xxx – Marks the start of a hyperlink subroutine.
@TITLE xxx – Sets the title of the window or node display.
@WORDWRAP – Turns on automatic word wrap.
@{b} – Bold on.
@{ub} – Bold off.
@{i} – Italics on.
@{ui}– Italic off.
@{u} – Underline on.
@{uu} – Underline off.

LISTING • LISTING • LISTING • LISTING

A COMPLETE AMIGAGUIDE EXAMPLE

```
@database
@wordwrap
@node MAIN
@title "Amiga Shopper example"
Multiview is a general purpose file viewer that can show @{"text" link MV_Text}, @{"pictures" link MV_Pix}, animations and so on.
It's so versatile it could even play music or display Wordworth documents (if the translations are available). You can check which translations are currently available by looking in the @{"Datatypes" link MV_Class} drawer on your Workbench3.0 and Storage3.0 disks.
Now click a button in the text above. Buttons are "Hyperlinks" to other parts of the text.
@endnode
@node MV_Text
@title Words
Multiview can be used to view text just like MORE - but it's far more powerful than that old thing...
* Tell me more about: @{"Pictures" link MV_Pix}
* I've seen enough. Take me @{"Home" link MAIN}
@endnode
@node MV_Pix
@title Pictures
You can view any @{"IFF" link IFF} picture with Multiview - by default the picture will open on the current display (usually Workbench) but you can define a custom screen or use a public screen if one is available.
* Tell me more about: @{"Text" link MV_Text}
* I've seen enough. Take me @{"Home" link MAIN}
@endnode
@node IFF
IFF: Interchangeable File Format. A very clever standard devised by Commodore and Electronic Arts to standardise translation of any file between applications. Mostly used for graphics and sound.
* I've seen enough. Take me @{"Home" link MAIN}
@endnode
@node MV_Class
Multiview relies on "translations" it finds in the Datatypes drawer of your Workbench disk. In the current release there are definitions for Amigaguide, ASCII text, IFF 8-bit sound samples, IFF formatted text and IFF animations with more to follow. The translations are very clever function libraries which tell Multiview what to expect.
* I've seen enough. Take me @{"Home" link MAIN}
@endnode
```

SMIDDY'S RED HOT TIP

If you use AmigaDOS often, there will be times when the complex hierarchy can become bothersome. Commodore supplies a useful script, PCD (previous CD) which allows you to toggle between two directories like this:

```
1.Workbench1.3:>PCD ↵
SYS:Tools
1.Workbench1.3:Tools>PCD ↵
SYS:Utilities
1.Workbench1.3:Utilities>PCD
1.Workbench1.3:Tools>PCD
1.Workbench1.3:Utilities>
```

For the sake of these examples the prompt is showing the current directory. This is fine if you want to switch between just two directories, but if you find yourself swapping between several places in the hierarchy – perhaps across several disks, PCD is less useful. Being a script, PCD is also rather slow.

The basis of this tip is a brace of simple aliases (suitable for AmigaDOS release 1.3 upwards) which remember the current directory and move to it afterwards. Using this technique is faster and more versatile than PCD, although it does require slightly more user interaction. Add the following definitions to your Shell-Startup, then close and reopen the Shell:

```
ALIAS TD ASSIGN DIR_[]: ""
ALIAS PD CD DIR_[]:
```

The pair work like this. TD (this directory) remembers the current directory and PD returns to it afterwards. Each alias takes a single argument which should be a name or number you can then use to return to. For instance:

```
1>TD 1
; sets this directory to "1"
1>TD SRC
; sets the current ↵
directory to "SRC"
1>PD 1
; returns to directory "1"
1>PD SRC
; returns to directory "SRC"
```

There is no limit to the number of directory paths you can store, and a directory can be anywhere – even on a different disk!

HOW THEY WORK

Time now for some explanation. These aliases rely on a feature of AmigaDOS's **ASSIGN** command that will allow you to create a logical directory (path) assignment to the current directory. In other words:

```
ASSIGN KEYS: DEVS:Keymaps
```

is the same as:

```
CD DEVS:Keymaps
ASSIGN KEYS: ""
```

The double quotes fill in the required destination argument and are read by the command-line parser as the current directory. (As I have already explained this is a feature of AmigaDOS directory locking.) The TD alias makes use of this, so:

```
1>TD SRC
```

translates into the following:

```
ASSIGN DIR_SRC: ""
```

This creates a logical path assignment pointing to the current directory. (Remember, the [and] are replaced by the first argument you supply at the command line.) This assignment is then added to the current system list.

Now, when you enter:

```
1>PD SRC
```

this creates the following command:

```
CD DIR_SRC:
```

and takes you neatly back to where you were before. Since these assignments are handled in a list they consume only a minuscule amount of memory so you can have as many as you wish. The following alias (which directory) will show where any particular assignment is:

```
ALIAS WD ASSIGN DIR_[]: ↵
EXISTS
```

You use it in much the same way, for example:

```
1>WD SRC ↵
SYS:Devac3/Source/Sleepy
```

MANY HAPPY RETURNS

Because of the width of the columns in Amiga Shopper, we occasionally have to break a command across two lines. Where this has happened, we use the ↵ symbol to indicate that you should not press the [Return] key at the end of the first line – just continue typing the second.

Multiview. These few commands enable us to create the basic framework for any Amigaguide document:

```
@DATABASE
@WORDWRAP
@NODE MAIN
@REM The table of contents ↵
and initial links go in here.
@ENDNODE
```

Nodes are, perhaps, a little complex at first and they do require a little more than just a cursory introduction. In an Amigaguide database a node is a page of text and optional links. Nodes can be stored anywhere in the database and accessed as required. Clicking on a link (shown as a button in the text) takes the user directly to a named node. There is no requirement to provide a return path from any node since this is handled by Amigaguide's **RETRACE** function. Links are assembled like this:

```
@{"Button text" LINK ↵
Node_name}
```

The link can be placed anywhere in the text which is formatted dynamically as the page is displayed. Typically, the first page of your database will contain a series of links to each of the individual "chapters". Each chapter may contain a series of sub-chapters or sections, each built from a separate node. The main node would then look something like this:

> **"these few commands enable us to create the basic framework"**

```
@NODE MAIN
1.@{"Chapter 1" LINK Chapter_1}
2.@{"Chapter 1" LINK Chapter_2}
3.@{"Chapter 1" LINK Chapter_3}
4.@{"Glossary" LINK Glossary}
ENDNODE
```

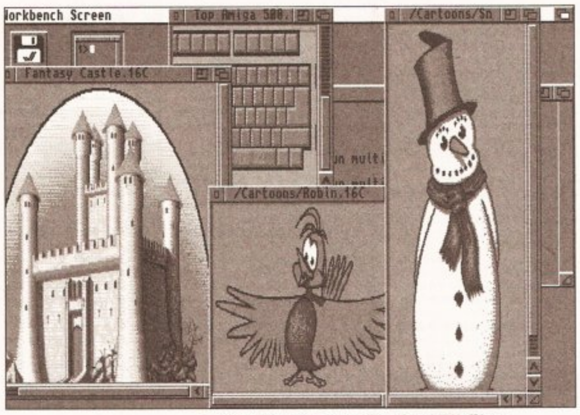
There is no need to make all the links resolvable while you are developing and testing the database, although it is an idea to provide empty nodes or hooks.

By default, the title of the window is taken from the current node name. You can override this at any point by inserting the following command:

```
@TITLE Window_Title_Text
```

THE MISSING LINK?

The **LINK** command should also be able to load other files such as IFF pictures and sound samples – but for some reason the version I was using (on an A1200 Workbench) steadfastly refused to do anything. However, this may have had something to do with the early version of Kickstart 3.0 soft-kicked in the machine. In any case, it seems it should be possible to insert something like this:



***Multiview* can display IFF files. These are on a 16-colour Workbench, but a custom screen could just as easily have been used**

```
@{"Show me a picture" LINK ↵
Diagram.IFF}
```

Ranged along the top of the Amigaguide database, you will find buttons for an index and an internal help system. By default, the help system is loaded from the **Amigaguide.guide** file located on the LOCALE: disk (or assignment if you're working from hard disk). This is also a good place to start if you want to see another example of Amigaguide at work. You can provide your own node index by incorporating the following command before the main node:

```
@INDEX Index_Node_Name
```

If this command is found, the Index button is made available and when clicked takes the user directly to the internal index node. Similarly, by incorporating the line:

```
@HELP Help_Node_Name
```

you can provide your own internal help and override the default setup.

Next month I'll be examining the Workbench 3.0 Startup-sequence and two extra commands which provide extra functionality and user-friendliness to scripts. AS

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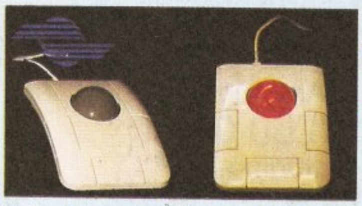
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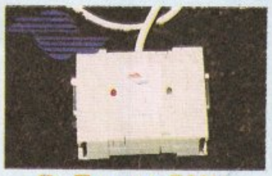
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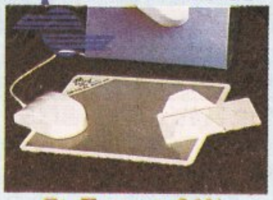
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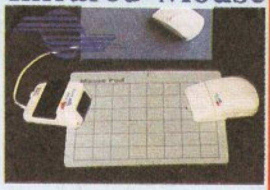


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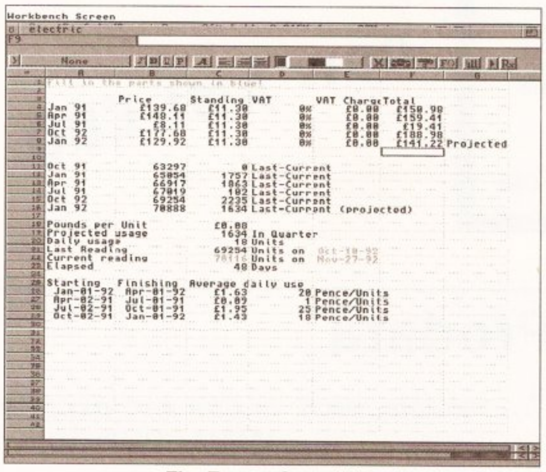
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Spreading *the* load

Electricity bills come as a nasty shock? Gas bills make you feel like sticking your head in the oven? Mark Smiddy shows how a spreadsheet can predict your bills well in advance

In many households, the most dreaded bill of all is the electricity account. It comes every three months without fail, and unless you pay by direct debit, it can come as a nasty surprise. We all need electricity for lighting, televisions and computers, but how much do we consume? The spreadsheet presented here will calculate average daily usage and extrapolate that into a projection of the quarterly bill. A few simple modifications will do the same thing for your gas bill and, in either case, will at least show you some soothing graphics.



The Energy Spreadsheet's electric version under development. This shot, taken from *ProCalc*, shows an anomaly in July 1991 caused by a council-estimated reading

The theory behind this sheet is simple statistical projection. In any household, electricity usage fluctuates on a daily basis, but the weekly average remains fairly constant. Over a complete quarter, the daily fluctuations are reduced considerably and, therefore, it is possible to project the quarterly bill from just a few weeks' readings. In a test environment the accuracy for readings taken at four days and 45 days was better than 97 per cent. (Although it still doesn't make the bill any easier to stomach.)

That doesn't mean to say the sheet will be that accurate in every house; if you nip out and buy a tumble dryer half-way through the quarter, expect the projection and final bill to rocket. At least two weeks' readings should be enough to ensure at least 90 per cent accuracy. In any event, at the end of the quarter, this sheet will tell you what the bill is going to be. By compiling a database of previous readings you will be able to compare usage over a year or many years.

Using the completed sheet is simplicity itself, although it does require a small amount of user interaction, in that it's up to you to enter the current meter reading accurately. The new meters are fairly simple to follow, the old style is more tricky. If you have never read such a meter before, consult the panel for more information.

ENTERING THE SHEET

Spreadsheets have to be programmed — there is no getting away from that, no matter what dealers might tell you. Listing a spreadsheet program is something we have not tried before. The problem is one of logistics: how is it possible to list a two dimensional matrix in a linear fashion?

The solution we have arrived at is to list all the cells in a more conventional form. Each cell is listed as the cell reference followed by the cell contents. For instance:

```
B6: =C14*C18
```

which means enter **=C14*C18** at cell reference B6. In some cases special formatting is required which has been noted in angle brackets, like this: "<format notes>". This text is not entered, but is used in setting up the sheet. As the program stands, it is suitable for *Professional Calc* — a little work is required to convert it to others such as *The Advantage*, *Analyse*, *The Works* and *Maxiplan*. Apart from the date functions, this should not require too much effort.

CELL DIVISION

What now follows is an overview of how the sheet functions...

COLUMN A

The majority of this column is made up of plain text. The dates A28...A31 could conceivably be real dates, but this makes no difference in practice.

A32: The conversion factor for the different metering systems. As a rule of thumb, use 100,000 for electric meters and 10,000 for gas meters. (To work out what you need, work out the meter's maximum reading, say 9999, add 1 and enter that.)

A33: The price-per-unit of the resource. At the time of writing, this

WHY MODULO?

Several calculations in this sheet use modulo or 'clock' arithmetic. In maths, a modulo is defined as the remainder left after division – so why should we be using it here? The key is that the most common metering system used for gas and electricity is a clock. In other words, it has a limited count before it returns to zero. The same is true of any computer function – though in mathematical science the largest number possible is infinity. The problem we are faced with here is the largest number that can be displayed on the dial is much less than that which a computer can handle: 99,999 rather than billions.

Consider the following. The dial reads 99720 and the projected usage we need to add is 300 units. This would lead to the following:

99720+300
= 100020

This is quite correct, but it is out of the meter's range.

In order to fix this we modulo the result with the meter's maximum displayed value plus 1. In other words:

100020 / (99999+1)
= 1 remainder 20

or, by using modulos to return just the remainder:

100020 MOD (99999+1)
= 20

Which is, of course what the meter would have read. The same calculation can be applied to cases where the calculation could yield a negative result. Ordinarily, it would be more appropriate to use ABS (absolute value) but this would not work here. Take a case where the meter has 'clocked' during a quarter. This could result in a negative value of units used, which would give a result like this:

20–99720
=–99700

The absolute value of this is 99700: the sort of fuel bill that could bankrupt a small town. To avoid this, we can add the maximum displayed value and calculate the modulus of the result.

((20–99720)+100000)
MOD 100000
=300

which is correct. This does not affect normal values, for instance:

98720–97720
=1000

is the same as:

((98720–97720)+100000)
MOD 100000
=1000

is 0.0795 for electricity and 0.01566 for gas. To arrive at this: if the price per unit is 7.95p, divide that by 100 and enter the result or simply enter the following: =(7.95/100).

COLUMN B

B4...B8: Read the values from the usage history table and calculate the billing cost based on the current charges. Some of these will not tally with previous bills due to the fluctuations in the cost of the resource. However, for chart-based comparison it is more important to show the absolute variations in usage. You can add another set of formulae to the right of these (C4...C7) to show this too.

B11...B15: These values are the readings from the previous year. The only important value is held in B15: this must be present for the sheet to work correctly. If the others are missing, this will cause erroneous values in the comparative results, but these are not used in the projected calculation.

B16: Calculates the projected meter reading. Since the normal meters only count up to 99,999 this value is a modulo of the result.

B23...B27: The remainder of this column is text values for dates. The examples provided here are correct for the sheet as shown and will remain so until January 1993.

COLUMN C

C4...C8: Are the standing charge for a quarter. Check this from your own billing information.

C11...C16: Compute the units used for each period. The period furthest back in time (C11) is always zero since this is the starting point. The remainder of these cells are calculated from the difference between the current value and the last one. Modulo arithmetic removes the negative values and ensures the value is within range.

C18: Current price-per-unit in pence.

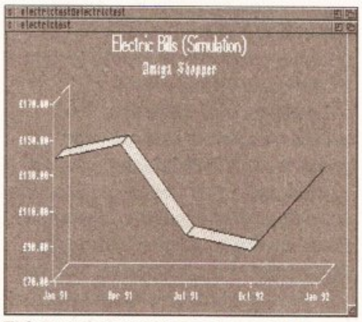
C19: Since C20 contains the average usage per day (in arbitrary units), this multiplies that value by 7*13, in other words, 7 days times 13 weeks, or, the number of days in a quarter. (In truth, this calculation is not absolutely accurate down to the last few pence, but it is close enough.) You can use the constant 91 in place of this if you wish.

C20: Calculates the average daily use by taking:

(last reading – current reading) /days elapsed

Modulo arithmetic takes care of instances when the meter reading is 'clocked'. This is explained in more detail in a separate panel.

C21: Extracts the current reading from the graph table and places it neatly in a table of values. This also makes it easily accessible for programming purposes.



This spreadsheet can be used to produce some rather attractive graphics – demonstrating how usage changes throughout the year

C22: Your 'current' reading is entered here. This cell should be highlighted in a different colour to show a user input.

C23: Calculates the days elapsed between the date of the last chargeable reading and the current one. E21 and E22 contain date index values. This calculation is done separately to allow easier conversion to other sheets.

C26...C29: Calculate the average daily usage of electricity. This value is useful if you are running on a tight budget since it can tell you how much to put away each day. Multiply the value by 7 and it will give you a week, 30.4 a month, and so on.

COLUMN D

D4...D8: These are only applicable to commercial properties at present; domestic users do not pay VAT on electricity. Even so, commercial users only pay VAT if they use more than 33KWhrs on a daily average. Domestic users should enter 0.

D26...D29: Calculate the average daily usage in units. You can replace the calculation 7*13 with the constant 91 if you prefer or enter the formula in a different cell.

COLUMN E

E4...E8: Calculate and display the VAT component (if any).

E21...E22: The date of your last and current reading. In fact, the only sheet where this can be entered directly (and it must be done in this format) is *Professional Calc*. In all other sheets the date index must be calculated separately.

COLUMN F

F4...F8: Compute the totals and projected total.

SUDDEN CONVERSION

It might come as a shock, but not all spreadsheets are the same. Even where functions may appear similar, they might not do exactly the same job. This is particularly true of date functions. *The Works*, *Analyse*, *Maxiplan* and *Plan/IT* can all calculate a date index: but the date must be entered as three separate function arguments. *Professional Calc* and *Advantage* can take the date as a string or a function. Just to aggravate matters though, the functions do not work the same way around! Please note also that *The Works* and *Analyse* precede their functions with '@' and not '='.

To save complicating matters still further, the method I have adopted is common to all spreadsheets (even *ProCalc*). *Advantage* users may wish to take the simpler path using the **DATEVALUE(STR)** function. If you are using *Advantage* (or *ProCalc*) the following should be entered in cells E21 and 22:

```
E21: =date(B38,B37,B39)<date>
E22: =date(C38,C37,C39)<date>
```

Works or *Analyse* owners should use:

```
E21: @date(B39,B38,B37)<date>
E22: @date(C39,C38,C37)<date>
```

Or, if you are using *Maxiplan* (V2.0 upwards) or *Plan/IT 3*, enter this:

```
E21: =date(B39,B38,B37)<date>
E22: =date(C39,C38,C37)<date>
```

The additional range A37...C39 described in the main program will also be required. To reiterate, if you are lucky enough to own *Professional Calc*, none of this is necessary. You can enter the date into the cell directly in the format: MM-DD-YY and it will be converted automatically.

IT'S A GAS

This spreadsheet can easily double up to make projections of gas units. Two things should be borne in mind

I'VE COME TO READ YOUR METER...

There are several varieties of electricity meter in use. The most common types are the dial and digital varieties. Both give a six-figure reading of the units used, but it is important to note that the last figure – 'tenths', usually shown in red – is not used. So, taking a reading from the digital type (as shown in Figure 1) is a simple matter of noting down the first five digits: 57610.



Figure 1: A digital electric meter

The older, dial type is more difficult to fathom. Not only do you have to compile a reading from five dials, but some of the dials rotate anti-clockwise! Consider Figure 2 which represents the same reading. The dials are read clockwise from left to right. Look at the digits on the 10,000s dial. Reading this clockwise it goes 9, 8, 7, and so on. So this dial must be read anti-clockwise. Find the position of the indicator and read the next lowest value: 5. Move on to the 1000s and the opposite is true. Here's a summary:

- Start at the dial on the extreme left of the meter.
- Determine if the clock runs clockwise or anti-clockwise.
- If the indicator is between two digits, read the lowest one.

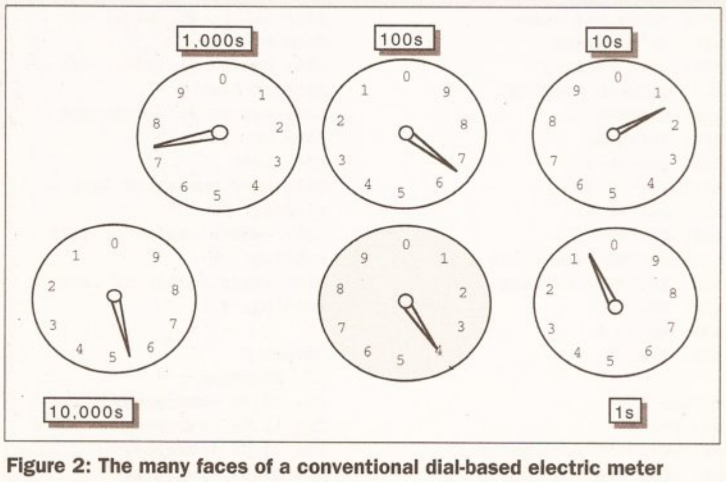


Figure 2: The many faces of a conventional dial-based electric meter

here: the price of gas and the number of digits on a gas meter. First, electric meters measure up to 99,999 (KW hours) and gas meters up to 9,999 (cubic feet).

More important, the price of gas is, at the time of writing, 1.566 pence per kilowatt hour (your local board will advise you). There is something else to consider here: the gas meter measures usage in cubic feet – so this must be converted too. The conversion formula is:

KWh=Cft*2.83*Cal/3.6

where **Cft** is the usage in cubic feet, and **Cal** is the calorific value of supplied gas in Megajoules per cubic metre. This is a variable value which changes from quarter to quarter, but a good average is 39. Check with the local board for an accurate figure.

Therefore, to convert this sheet to gas you need to change the cells at A32 and A33. (You will also need to do this when the price rises.) The conversion from cubic feet to KWh should be done as a function:

```
A34: =2.83*A35/3.6
A35: 39
B34: " constant for ↵
conversion Cubic Ft -> KWhrs
B35: "< Average calorific ↵
value <text>
```

Make the conversion to KWhrs at B4...B8, C26...29 and D16...29:

```
B4: =C12*C18*A34 <currency>
B5: =C13*C18*A34 <currency>
B6: =C14*C18*A34 <currency>
B7: =C15*C18*A34 <currency>
B8: =C16*C18*A34 <currency>

C26: =D26*C18 <currency>
C27: =D27*C18 <currency>
C28: =D28*C18 <currency>
C29: =D29*C18 <currency>

D26: =C13*A34/(7*13)
D27: =C14*A34/(7*13)
D28: =C15*A34/(7*13)
D29: =C16*A34/(7*13)
```

VAT'S ALL FOLKS

VAT on gas is paid by commercial users, but not by domestic ones. The standing charge is also calculated differently at 10.29 pence per day in the North (check your own area). Therefore you need to change these:

```
B4: =1029*7*13
B5: =1029*7*13
B6: =1029*7*13
B7: =1029*7*13
B8: =1029*C23 <estimates ↵
the current standing charge>
```

C4...C8: If you are a domestic user, enter 0 in these columns, otherwise enter the standard VAT rate: 17.5% at the time of writing.

ENERGY SAVING TIPS

It's important to realise this spreadsheet has a lot of forward references – so it cannot be recalculated correctly in a single pass. When you enter your reading data select **recalc** at least five times to allow the formulae to sort themselves out. Each time the **recalc** function is entered, the projected cost will change: when it settles down to a constant value the correct amount has been arrived at. (With advanced spreadsheets like *Advantage* or *Professional Calc*, you can set the number of iterations to five from the preferences requester.)

Once entered this spreadsheet is very simple to use. You just enter the appropriate data at a few points and let it do the rest. Not everyone keeps their electricity bills, but your local Electricity Board should be able to tell you your last four readings over the telephone. That should be quite sufficient to get you started. However, there is no reason why the sheet cannot be used to keep track of electric bills for years to come. One other thing must be kept in mind here: the price of fuel will change and the sheet can only make an accurate prediction if that is up to date. Other than that, extending the sheet is simple:

1. Insert blank rows above the projections at A8 and A16.

2. Copy the row at A7 and paste relative into A8. Copy the row data from A16 and paste relative to A17.

3. Correct the reference to the unit-price constant in B8. (You can check what this is by looking at the formula in B7.)

4. Update the data references for the units used, dates and such like, then recalculate.

In conclusion, I should point out that this spreadsheet was put together to make its workings as clear as possible – with the aim of making it portable between different programs. So, it could be streamlined to make it faster. You might like to try this as an exercise. If you do, try and make use of the special features your spreadsheet offers: *Maxiplan* can use named ranges; *The Works* can mix absolute and relative cell references in the same formula; *Advantage* can take dates as strings and so on. Whichever way you do it, remember a spreadsheet is anything but a closed application. **AS**

LISTING • LISTING • LISTING

```
Column A
A1: Fill in the parts shown ↵
in blue!
A4: Jan 91
A5: Apr 91
A6: Jul 91
A7: Oct 92
A8: Jan 92
A11: Oct 91
A12: Jan 91
A13: Apr 91
A14: Jul 91
A15: Oct 91
A16: Jan 92
A18: Pounds per Unit
A19: Projected usage
A20: Daily usage
A21: Last Reading
A22: Current reading
A23: Elapsed
A24: Starting
A25: Jan-01-92
A26: Apr-02-91
A27: Jul-02-91
A28: Oct-02-91
A32: 100000 <see text>
A33: 0.0795 <see text>
A37: Date #
A38: Month #
A39: Year #

Column B
B3: Price
B4: =C12*C18 <currency>
B5: =C13*C18 <currency>
B6: =C14*C18 <currency>
B7: =C15*C18 <currency>
B8: =C16*C18 <currency>
B11: 63297 <blue; taken 12 ↵
months ago>
B12: 65054 <blue; taken 9 ↵
months ago>
B13: 66917 <blue; taken 6 ↵
months ago>
B14: 67019 <blue; taken 3 ↵
months ago>
B15: 69254 <blue; last reading>
B16: =MOD(C19+B15,99999)
B23: Finishing
B24: Apr-01-92 <blue; txt ↵
date of B12>
B25: Jul-01-91 <blue; txt ↵
date of B13>
B26: Oct-01-91 <blue; txt ↵
date of B14>
B27: Jan-01-92 <blue; txt ↵
date of B15>
B34: Last
B37: <Day number of last ↵
reading: DD>
B38: <Month number of last ↵
reading: MM>
B39: <Year number of last ↵
reading: YY>

Column C
C3: Standing
C4: 11.04 <currency>
C5: 11.04 <currency>
C6: 11.04 <currency>
C7: 11.04 <currency>
C8: 11.04 <currency>
C11: 0
C12: =MOD(B12-B11+A32,A32)
C13: =MOD(B13-B12+A32,A32)
C14: =MOD(B14-B13+A32,A32)
C15: =MOD(B15-B14+A32,A32)
C16: =MOD(B16-B15+A32,A32)
C18: =A33 <currency; see text>
C19: =C20*(7*13)
C20: =(MOD(C22-C21+A32,A32))/C23
C21: =B15
C22: 70116 <blue>
C23: =E22-E21
C25: Average daily use
C26: =D26*C18 <currency>
C27: =D27*C18 <currency>
C28: =D28*C18 <currency>
C29: =D29*C18 <currency>
C34: Current (dates)
B37: <Day number of current ↵
reading: DD>
B38: <Month number of current ↵
reading: MM>
B39: <Year number of current ↵
reading: YY>

Column D
D3: VAT Rate
D4: 0 <percent; unknown!!; ↵
commercial only!>
D5: IF (D26>33,.175,0) <per ↵
cent; see text!>
D6: IF (D27>33,.175,0) <per ↵
cent; see text!>
D7: IF (D28>33,.175,0) <per ↵
cent; see text!>
D8: IF (D29>33,.175,0) <per ↵
cent; see text!>
D11: Last-Current
D12: Last-Current
D13: Last-Current
D14: Last-Current
D15: Last-Current
D16: Last-Current (projected)
D19: In Quarter
D20: Units
D21: Units on
D22: Units on
D23: Days
D26: =C12/(7*13)
D27: =C13/(7*13)
D28: =C14/(7*13)
D29: =C15/(7*13)

Column E
E3: VAT
E4: =(B4+C4)*D4 <currency: ↵
see text>
E5: =(B5+C5)*D5 <currency: ↵
see text>
E6: =(B6+C6)*D6 <currency: ↵
see text>
E7: =(B7+C7)*D7 <currency: ↵
see text>
E8: =(B8+C8)*D8 <currency: ↵
see text>
E21: Oct-10-92 <date of last ↵
reading: see text>
E22: Nov-27-92 <date of ↵
current reading: see text>
E26: Units
E27: Units
E28: Units
E29: Units

Column F
F3: Total
F4: =B4+C4+E4
F5: =B5+C5+E5
F6: =B6+C6+E6
F7: =B7+C7+E7
F8: =B8+C8+E8

Column G
G8: Projected
```

Due for release during September 1992

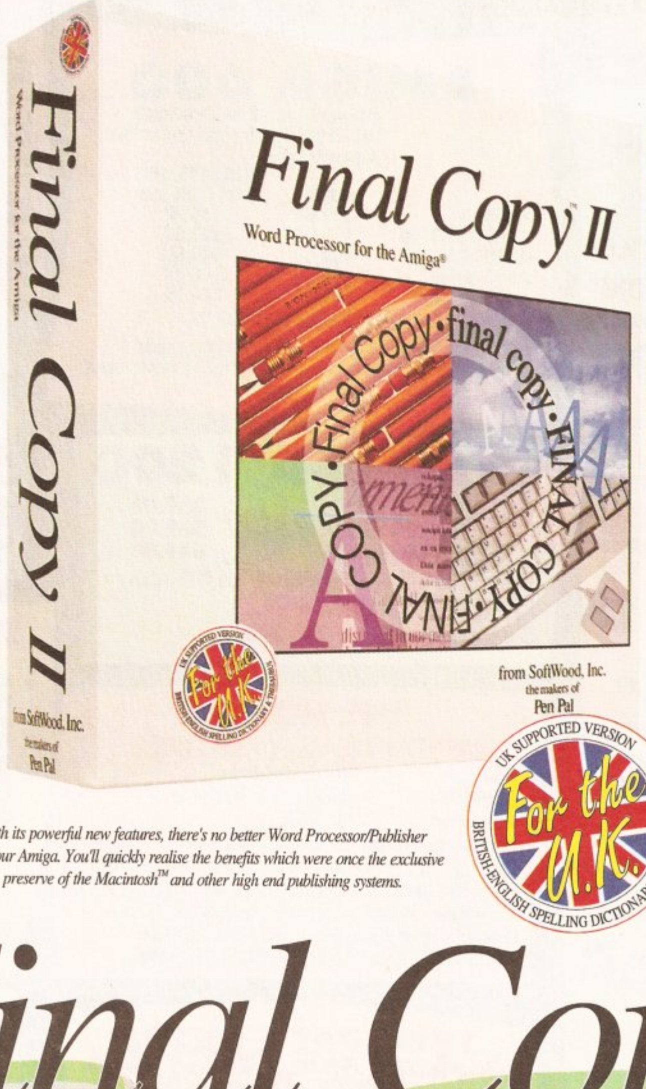
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Everything's

The Internet offers a whole new world of information for you to tap in to. Comms expert Dave Winder shows how you can net yourself a bargain

What is the Internet? It's something which most people find very daunting and confusing, and that includes many experienced comms users. Hopefully, after reading this, you will have a much better understanding. To put it simply, the Internet is a network of computer networks that is linked around the whole world.

The current estimate is that there are around 800,000 sites connected to the Internet. What this means to you is that if you can access the Internet, you can also log on to any of these computer sites that will let you. Imagine it, thousands upon thousands of on-line databases, games, files, chat systems – the list is endless.

Until recently a hobbyist would have little chance of being able to use the Internet, simply because of the cost of getting access to it. Unless you were a student at university, or worked at a company that had a site connected, it was unlikely you would have the resources necessary to set up a connection of your own.

But all that has now changed, and mere mortals like ourselves can join in the fun for just a few pounds a month. Two commercial services are now offering Internet access: CIX (the Compulink Information eXchange) and DIS (Demon Internet Service). You'll find more information on these in the boxes on this page. First though, let's take a look at what the Internet offers.

Most people have great difficulty in finding their way around the Internet, or more precisely in finding the right address to use. This is largely because there are many different types of address, so many that even I find them confusing. For instance, a typical Internet address might look something like this: **wavey@davey.co.uk**. I'll now break this address down into all its component parts and explain what each of them means.

WHAT'S IN A NAME?

Consider your address in the 'real world'. It consists of your name, followed by the street and town where you live, and finally a postcode. The Internet is very similar. In the example I have given, the name before the "@" character is my name, and everything after it is the location. So, for the purposes of our example, I am "wavey" and I can be found on a computer called "davey". The "co.uk" part of the address helps pinpoint my location more precisely, and it is this section that can be confusing, although it really shouldn't be. All it is telling us is the sort of organisation concerned and which country the site is in. In our example, "co" refers to a commercial concern. Had it said "edu", that would have been a university or the like; "gov" refers to a government site, and so on. "uk" is pretty obvious really, isn't it?

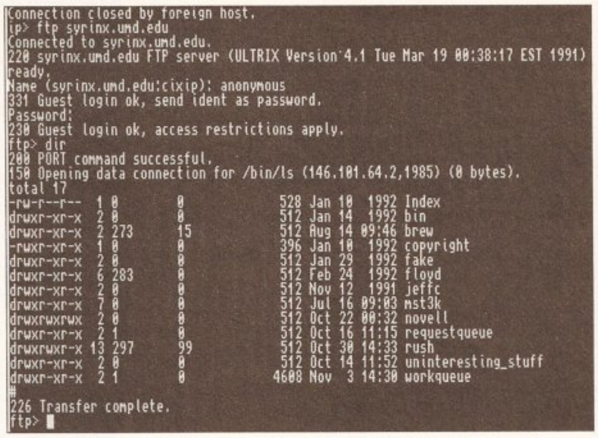
This apparently complicated structure is required because there are so many sites on Internet that they need to be easily and quickly identifiable. To make things even quicker each site also has an 'IP Address' which is numerical in form. These take the form of 32-bit numbers shown as a set of four numbers separated by full stops.

For example, a site's IP Address might be 125.25.250.521. The numbers represent exactly the same structures as already explained, just in numerical form. So the 125 of our example would equate to "wavey" in the full address.

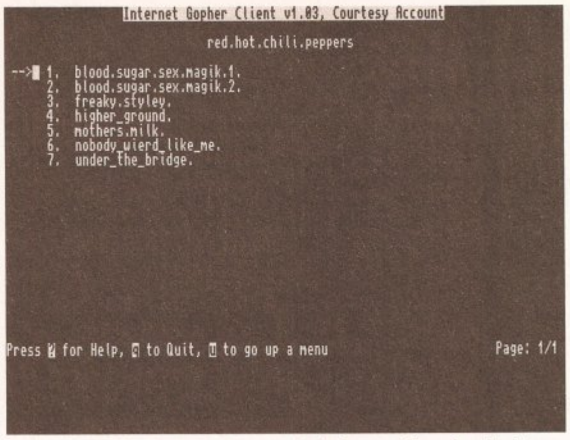
FTP IS FOR ME

FTP is the Internet's File Transfer Protocol, and is one of the most popular uses for Internet. Using FTP you can transfer files from computers all over the world onto your machine! Of course, you have to have access to a computer site that will let you do this. Luckily there are lots of such sites which allow what is known as Anonymous FTP.

Anonymous FTP basically lets you get these files without the need to have an account with the site where the files are stored. Some of these sites are universities, while others include the people who run the Internet. A regularly-updated list of all FTP sites is available, and this is very useful in finding the best place to go for your files. The Amiga



FTP (or to give it its full name, File Transfer Protocol) in action. Using the 'anonymous' facility, you don't even need an account to be able to log in to the other computer



Gophers on the Internet are not to be confused with the desert-living rodents of the same name. You can tell them apart because the Internet variety has more menus

CIX

The Compulink Information eXchange has a joining fee of £25.00 which includes a comprehensive manual. Connection rates are £2.40 per hour off peak and £3.60 per hour peak, subject to a monthly minimum charge of £6.25. All these prices are exclusive of VAT.

For more information you should contact CIX, Suite 2, The Sanctuary, Oakhill Grove, Surbiton, Surrey KT6 6DU ☎ 081-390 8446.

DIS

Demon Internet Services has a joining fee of £12.50 and a monthly charge of £10.00. Both charges are exclusive of VAT.

There are no other usage charges, apart from your telephone bill.

For more information you should contact Demon Internet Services, 42 Hendon Lane, Finchley, London N3 1TT ☎ 081-349 0063.

is particularly well served in this area, with a number of sites carrying every sort of public domain program you could possibly want. Because of the sheer size of the Internet it is likely that you will always be able to find the file you want, somewhere!

To get access to these files you need to know the address of a site that allows Anonymous FTP. In the example shown at the top of the facing page, I am actually FTP'ing from a site called "syrinx.umd.edu" which holds information on the rock bands Rush and Pink Floyd (which happens to be of interest to an old hippy like me). As you can see, I have successfully logged on as a guest, and have then asked to see what file areas are available by using the "dir" command. I can then change directory using the "cd" command and list the files available. It is very similar to using AmigaDOS, and it should be – you are basically using the host computer's operating system (usually UNIX). Once you have found the file you want, you request it to be transferred to your computer, and the host site in effect mails the file to you. To do this you just use the "get" command.



GOPHER THE FACTS!

The Internet can also be extremely useful for gleaning information on just about anything you can think of. This is because many immense databases are held at numerous sites connected to the Internet. To help you sift through all this info, there is a program called Gopher which can be thought of as a "go for this, go for that" utility. It gives you a menu-driven database which shows the information, indexed by category, available on various sites.

Gopher lets you delve through its menu branches until you arrive at the information you want, at which point you can connect to the site holding the information and mail yourself the text file you are interested in. In this way, you're saved from having to connect to various sites in the search for the information you want, as it is all done from a single Gopher site using the menu system. In the example shown (on the left) I am connected to a Gopher system and have found the lyrics to an album that I was interested in.

OH NO – ANOTHER NET

If you want to find out what is happening, in just about any sphere of life, anywhere in the world, then you should check out Usenet. Usenet is a set of networks that exchange messages or articles. These come under various categories, and are sorted into newsgroups. A newsgroup may be concerned with our beloved Amiga, it may be for talking about world politics, or it may just be for free-flowing chat. The main problem is that these newsgroups cover just about everything you can think of, and so there are rather a lot of them.

Usenet sites include universities, US Government agencies, businesses and more. I could fill the rest of this month's column with facts about Usenet, but I won't. Instead I will cover this topic in more depth in a forthcoming issue of *AS*.

IT'S A DIRTY GAME

There is a lot of MUD on the Internet. Or more accurately there are a lot of MUDs on the Internet. A MUD, or Multi-User Dungeon, is an on-line game in the form of a text adventure. I am sure you are all familiar with the concept of a text adventure, and are probably thinking "big deal", as this humble form of entertainment has long since been overtaken by graphical games. However, you would be wrong to dismiss MUDs without trying them. It may be a tad boring to sit at your Amiga playing a text adventure all alone, but it takes on a whole new dimension of excitement when there are 50 other people playing with you, all in real time!

The picture below shows the login screen to one of the newest and most interesting MUDs, *Discworld*. This is based on the series of *Discworld* novels by Terry Pratchett and closely follows his style of humour. However, be warned: this type of game is terribly addictive and so terribly expensive. That is their major disadvantage.

CONNECTIVITY

If, like me, you belong to a number of on-line services, there is another feature available with the Internet which will be a lot of interest to you. I belong to a system based in San Francisco called *The Well*, but a transatlantic call isn't cheap. The Internet protocol called Telnet solves this problem. This allows me to connect to my local Internet Gateway, in my case at CIX, and then make a remote connection to *The Well* in America. All this is available for just the cost of my local call. It is this sort of service that is making worldwide telecommunication a reality for so many people.

Talking of connectivity, earlier I mentioned two services offering a gateway to the Internet at very reasonable prices. First of all there is CIX, which is how I personally access the Internet. CIX has only recently opened its gateway and already it has proved to be a great success. To access Internet this way you need to be a member of CIX – more details are shown on the facing page. There are no extra charges for using Internet, so all you pay is your standard connection rates to CIX.

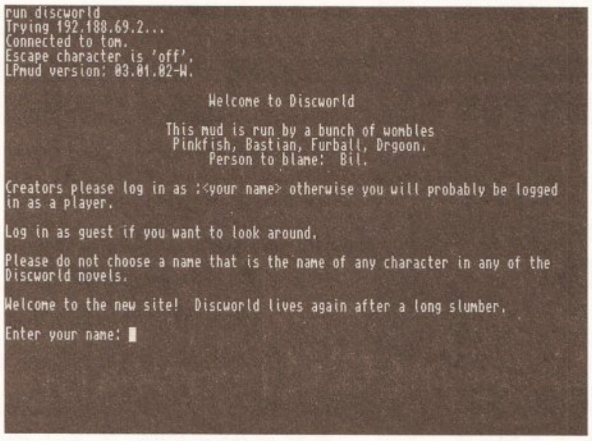
This makes CIX a very economical method of Internet access for the user who wants an occasional file, or to grab some information from Gopher every now and then. Conversely it makes it an expensive way to play one of the MUDs, or to spend hours every night chatting to some dude in California. A very big plus in using the CIX Gateway is that you don't have to set up all the software as you do with other systems, as CIX has done all this already. This can save an untold amount of hassle for the average computer user. Indeed, once you are connected to the Internet Gateway there is plenty of on-line help to guide you through your first uneasy steps, as shown in the picture below.

Already there is an Internet conference open and very busy on CIX, offering help and advice to both hardened 'netter and beginner alike (one of the Moderators is a very friendly chap called Dave Winder!)

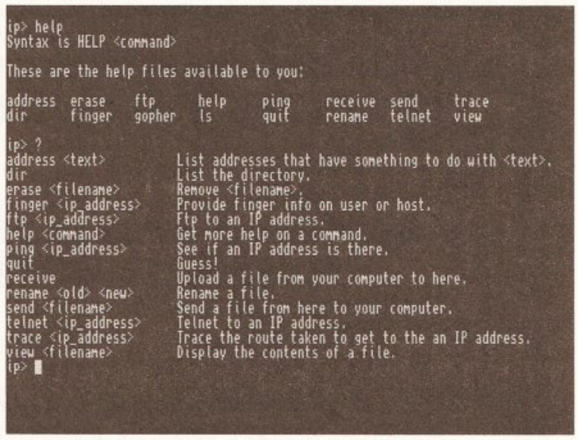
DEMONIC POSSESSION

The other service I mentioned was DIS. The Demon Gateway has been open for some time now, and is also known as the "Tenner-A-Month" service. This is because you actually pay ten pounds a month (plus VAT) no matter how much time you spend on-line. What this means is that DIS is a very economical method if you want to spend a lot of time connected, making it ideal for playing MUDs, chatting and such like.

The main disadvantage is that many people find it quite difficult to get the software set up and running, as you have to do this on your own computer. Having said that, once you are a member of the service there is a telephone helpline which will try and get you going as smoothly as possible. At the moment, probably the most important difference between these two services is that DIS offers full Usenet access, while CIX has a read-only service. However, CIX hopes to offer full Usenet access in the near future. AS



Dark here, isn't it? MUD (Multi-User Dungeon) games are a popular on-line pastime. They may look like traditional text-only adventure games, but they're very different to play



Logged on to a computer half-way round the world, and can't remember which command to use? The CIX Internet Gateway always has plenty of help on hand

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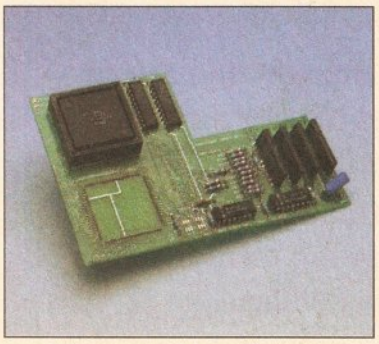
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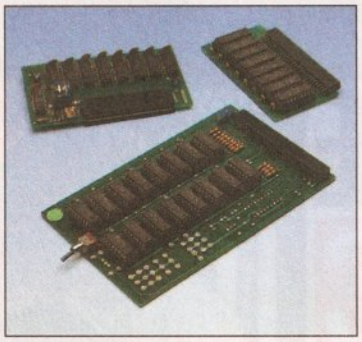
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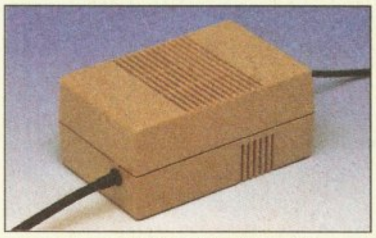
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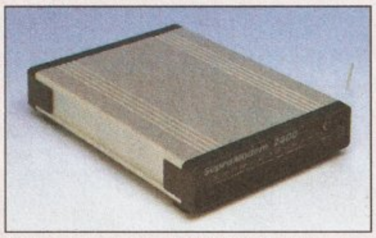
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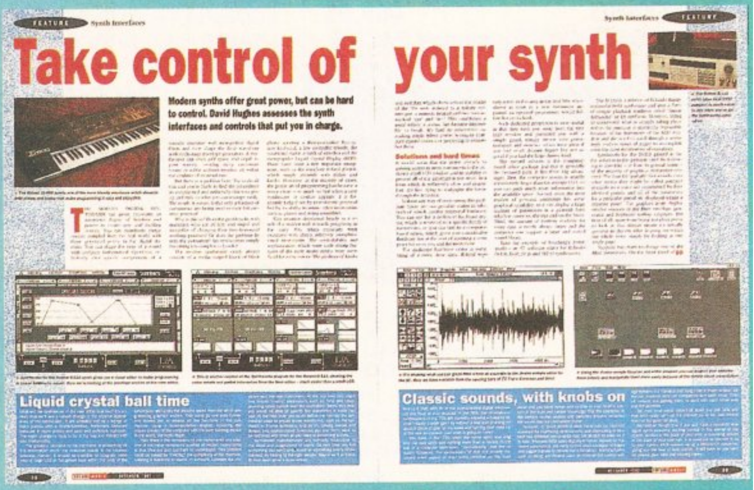
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an orchestra in your pocket

Whether it's a bass guitar or a didgeridoo, there's a sample for you in the Walkabout disk library. Paul Overaa sees if he can hear the difference

A lot has been happening on the music scene over the last few weeks. We've had rumours of new sound chips, details of budget-priced 16-bit samplers, and whispers about strange new sample formats appearing on the Amiga. Even the 8-bit sampling arena gave us a surprise because Black Night Peripherals' *Crystal Sound Sampler* has appeared and believe me this is not your ordinary, run-of-the-mill piece of sampling hardware. We are talking about a good piece of kit that may end up giving *Audio Engineer* a run for its money.

You'll get the full story about *Crystal Sound* next month – by then I'll have had the chance to see if it floats, to jump up and down on it, and to put it through all manner of other unspeakable tests. This month however I thought you might be interested in those whispers about new sample formats – but before that here's some news about something else that I discovered in my musical travels...

> *"a good piece of kit that may end up giving Audio Engineer a run for its money."*

WALKABOUT MUSIC'S IFF SOUND SAMPLE LIBRARY

There are a lot of IFF sound sample libraries available and for most people there just isn't enough time in the day to locate them all, let alone obtain, experiment with and evaluate them. I'm in the same boat time-wise but am fortunate in that I do get to see rather more of what is available than most people. Having said that I still regularly come across sound collections that I hadn't previously encountered and, once in a while, find samples which (in an 8-bit IFF SVX sense) are not only good but are stunningly good. Such is the case with some samples I ran into a few weeks ago from Walkabout Music.

The library itself covers all the usual types of musical instruments (pianos, strings and such like) and also includes a lot of the more obscure instruments and percussion sounds. Whether you want an African tablah percussion sound, a Turkish frame drum, or a didgeridoo, the chances are that you will find it in this 25-disk library.

Each disk contains samples from a particular sound category and the full library list goes like this: African, Indian instrument, Indian percussion, Arabic, Far East, European, Oceania, Americas, FX percussion, Drum kit, Analogue percussion, Latin percussion, guitars, bass guitars, analogue bass, digital bass, brass, synth brass, pianos, strings, synth strings, choirs, organs, bells, and sound effects (screams, gun shots, explosions and more). The number of samples on each disk varies, depending on size, from 16 to over 100. I suppose that around 35-40 sound samples per disk would be a good average.

CLEAR AS A BELL

There's no doubt at all that Walkabout Music has done an excellent job technically but, as has been proved time and time again, it's not just having good equipment that matters – those doing the sampling need to have a good musical ear so that the samples capture the 'feel' of the instrument in question. In short you have to be a musician to know when you've got it right.

For instance, real church organs tend to have extremely prominent third and fifth harmonics which give a special richness to their notes. You need to capture these if you want to create a realistic sample. Similarly, modern bass players can produce very characteristic percussive effects by 'slapping' the strings and may occasionally accentuate this by pulling the strings away from the fretboard at the start of some notes. Even if you have all the best sampling equipment in the world you are not going to get a decent 'modern sounding' slap bass sample if you don't know how to produce that type of sound on a bass guitar in the first place.

> *"more to the point, you can hear them at a level that makes the sample sound authentic."*



The Walkabout library comprises 25 disks of top-quality 8-bit IFF samples. So, musicians, are you just pleased to see them, or is that...

WORTH LISTENING FOR

With the Walkabout Music samples you can actually hear things like church organ overtones and, more to the point, you can hear them at a volume level that makes the sample sound authentic. The bass guitar sounds are pretty fair as well – in fact they are as good as I've ever heard. If you want to get an idea of just how good the library is, take a look at the bass guitar disk (no. 14).

I suspect that many of the library sounds (which, incidentally, are all taken at 16,726 samples per second) will have been made from in-house prepared 16-bit master copies or other 16-bit master sources. How they've been prepared doesn't really matter – it's the end results that are important and in this case the results are good.

Now I'm not suggesting that everyone goes out and buys the complete library, but it would certainly be worth your while asking Walkabout Music for their IFF library catalogue sheet. At this price, it's also well worth trying out a few of the disks that cater for any sounds in your current collection that you're not particularly happy with.

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Music continues on page 118

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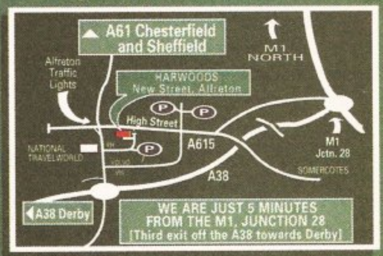
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DEFINITIONS *of sound*

Confused by all the different sample formats? Don't know your 8SVXs from your Audio IFFs? Paul Overaa reveals how digitised sounds are stored

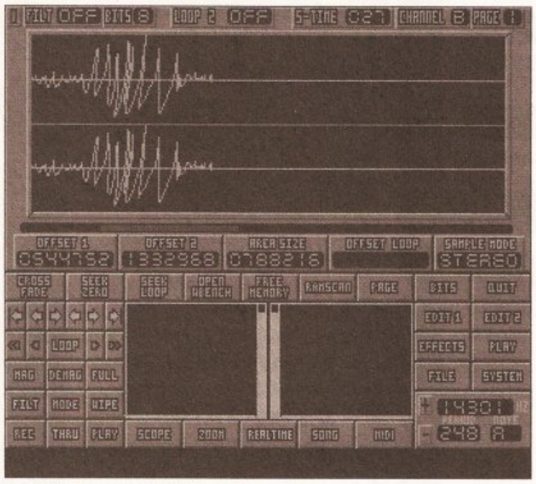
Those of you who are sampling literate (like what I am!) will know that there is a quite a variety of file formats used to store sampled sound data. On the 8-bit front the Amiga user has a choice of dozens of samplers but the sampling software which is used to collect and store the digitised sound tends to offer storage in one of two forms – IFF 8SVX sound files or raw data. On the face of it the choice is simple but, as far as IFF files are concerned, there's slightly more to the story than first meets the eye.

Almost everyone with an Amiga gets to hear about the IFF (Interchangeable File Format) standard within a relatively short space of time. IFF is a common data file storage standard supported by almost all Amiga programs which read and write data. The purpose of the IFF standard is to create a situation whereby program data (which could represent graphics, music, sound, or whatever) becomes 'portable' (or, in other words, interchangeable) and can be moved between different Amiga software packages (or perhaps even to similar software applications running on other computers).

WORKING TITLES

The standard has found acceptance for the best reason in the world – it works! An IFF sound sample created and stored using SunRize's *Perfect Sound* sampler could, for instance, be read in and edited using Aegis' *AudioMaster IV* before being re-stored and used as a sound sample in, say, *OctaMED Professional*. These IFF file arrangements work because various types of data are stored in labelled 'chunks' which programs can identify and use (or ignore) as they see fit. These labels have four characters and with 8-bit sound samples the chunks are called 8SVX chunks, since they represent 8-bit Sampled Voice data. As it happens, it is possible to create all manner of IFF 8SVX files, including mono, stereo, multiple octave, and even files which contain multiple loop points.

To a sampling newcomer these terms may not mean much anyway and this in itself is one good reason for putting their discussion on the agenda. Often even established sample users, though aware of the fact that IFF sound files are used, may not be completely sure of all the various terms nor about the various types of IFF 8SVX files that exist. But as low-cost 16-bit samplers, like Microdeal's *Clarity 16*, are about to appear in the marketplace, Amiga users are also going to see some new sample file formats arrive. Since this is guaranteed to add to the confusion I thought that this month I should cast some light on the existing IFF sound sample format and on the new terms, like AIFF and AVR, that Amiga sample users will shortly start encountering.



As 16-bit sampling arrives on the scene, the days of the conventional 8-bit Amiga IFF 8SVX editor may now be numbered

Now, the object of this exercise is to explain everything in a way which allows the general ideas to be understood by everyone. So, I'd best start by apologising to any of the more serious programmers reading for skimping on some of the awkward technical details.

RAW SAMPLE FILES

When you use digitising hardware to collect a sound sample you provide the digitiser with some kind of input waveform (in other words, the sound you are sampling). The sampling software effectively chops up the input waveform and, as we saw last month, stores this data in memory as a series of numbers. This digital copy of the sound is often called the raw waveform data. Sample-editing packages which store raw sample files are simply creating files that contain just the numbers which represent the waveform in memory after the digitisation process.

> **"it is no good for exchanging sound data between programs"**

Raw files therefore contain the digitised waveform data, but they do not contain any extra information, such as details of the speed at which the sample should be played.

Because of the lack of any inherent playback or contents information, a program using a raw sound sample file needs to find out how it should be used by some other means. For instance, many games programmers opt for raw sound samples, but include the various details of playback rates and such like within the programs that use the samples. In order to play a sound the data is read into Chip memory (memory that can be accessed by the Amiga's custom chips) in the same way as any other file would be read in. The benefits are that this is easy to do and that, once in memory, the sound is immediately ready to play.

QUICK AND DIRTY

This 'raw data' approach is obviously fine in specific situations where it is being used by programmers who know about the original samples and know how the Amiga audio hardware works. But it is no good for exchanging sound data between programs – a program reading a raw sound sample file is not going to know how it should be played back. You will soon realise this if you ever save sound samples in raw data form and then try to use them in other software packages.

What is needed of course is a file format that saves not only the waveform data, but also details of how the sample should be played. In other words the file must contain not only the waveform data itself but also some standardised 'header information' which allows a program reading the file to work out how it should be played. This, of course, is where the IFF 8SVX standard arrives on the scene.

IFF 8SVX FILES

As mentioned earlier, the 8SVX chunk defined in the IFF standard is used to store 8-bit sound sample data. In its simplest form it will contain a label, a size value, and some waveform data. To a program reading it an 8SVX file looks like an IFF chunk and in fact it is – it's a chunk unit known as a FORM which acts as a sort of 'container chunk' (you will occasionally read about FORM 8SVX in the Amiga literature).

Actually there is a bit more to the story because inside the FORM 8SVX unit both the header info and the waveform data are also stored as sections called VHDR (Voice HeaDeR) and BODY chunks. So even a simple 8SVX file will, conceptually, look something like this:

<— Simple IFF FORM 8SVX sound file —>
<8SVX label>
<size>
<VHDR header info>
<BODY waveform data>

The 8SVX, VHDR and BODY chunks all have size fields enabling the programs reading them to skip over them if they are not required. In fact many other nested chunks may also be present holding copyright details and all sorts of other information. I am not going to discuss the VHDR header in detail but there are a few things about it, and the associated waveform data held in the BODY chunk, that are worth mentioning.

The IFF sound sample format allows a number of different waveforms to be stored together, including a 'one-shot' sample. This is a waveform that is intended to be

played once at some nominal playback rate. The file may also include a 'repeat' part waveform. The idea here is that when samples are played as musical instruments, the programs using them can initially play the one-shot part of the waveform, and then loop around playing the 'repeat' part of the waveform for as long as the sound needs to be sustained.

Most sample editing software packages allow you to set the start and end loop points. When you do this these loop values are also stored in the IFF file so that programs reading the file will be able to identify the looped part of the waveform. However, not all IFF sound files that you come across will have both one-shot and repeat parts of a waveform stored.

TURN UP THE STEREO

So far I've been talking in terms of mono samples. Stereo samples are stored in much the same way except for the fact that the chunk definitions are slightly modified so that two separate waveforms (for left and right stereo) can be provided:

<— BODY stereo waveform data —>
<left-channel waveform>
<right-channel waveform>

Stereo samples may sound good, but they have one big disadvantage – they take up almost twice as much space (both on disk and in memory when playing). This is only really to be expected because two lots of sound samples are present in each stereo IFF file. In fact, if you sample a sound in stereo and then use one of the many utilities that can convert 8SVX files to raw data (which work by stripping out everything except the waveform data), you'll find that when you play the raw version it will often sound as though your original sample is being played back twice. Of course, what is happening here is that, with the IFF header details removed, the software reading the sound can no longer identify it as a stereo sample, and so it just plays the data as one long single mono sample. The left-hand stereo data is played first and this is followed by the right-hand data. Because it's all coming from one channel, and because there is usually not that much difference between the left and right channel data anyway, it sounds just like a single sample being played twice.

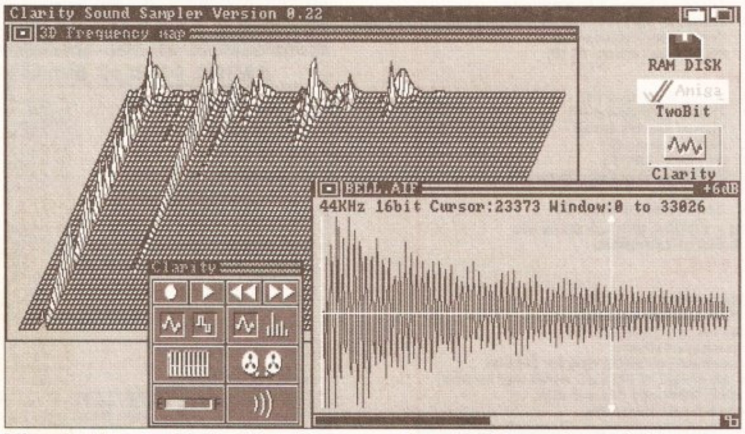
Programs that use sampled sounds as instruments achieve different notes by modifying the rate at which they play back each sound sample. However, samples always sound best, or at least at their most natural, when they are played back at rates near to the one at which they were originally sampled. With large alterations in playback rates the quality of the voice can often deteriorate drastically.

"However, Audio IFF does have a few disadvantages..."

PITCHES AND LOOPS

The IFF standard helps programs to avoid these sorts of problems by allowing multiple octave sound data to be stored. This means that in any given situation a program can choose an octave nearest to the note it wishes to produce. Three and five octave 8SVX file versions are reasonably common.

One of the biggest advantages of the IFF 8SVX chunk arrangement is its adaptability. New chunks can be defined and included by one program without that data causing problems for other programs. A classic example of this is seen with a relatively new 'multiple loop' chunk definition registered by Peter Norman of RamScan Software (who produce *Audio Engineer Plus*). The *Audio Engineer II* editing software and *Audiomaster IV*, the Aegis version of the same package, both allow multiple loop files to be created. This has been achieved by adding special chunks which store pairs of 'loop start' and 'loop end' definitions. Programs which can understand (and, more to the point, wish to use) the data in these chunks can read them and interpret the data as they see fit. Programs which do not understand such chunks, and this includes of course all the programs written before the chunks were devised, will simply skip over and ignore their contents. This type of flexible standardisation is of immense long-term advantage to both users and software houses alike, although it does complicate the programming issues. As it turns out, there is even more that can be done in this respect.



Microdeal's new *Clarity 16* package promises 16-bit sample resolution – and a new range of sample file formats to go with it

THE ALL-NEW 'AUDIO IFF' STANDARD

By this stage you will probably have gathered that the IFF 8SVX sound sample format is a pretty flexible beast. Nevertheless it has been built around the storage of 8-bit sample data, and there's no doubt that in time the 8SVX format is going to become obsolete. In fact, affordable 16-bit sampling resolution, in the form of Microdeal's *Clarity 16* package, will probably have surfaced by the time you read this. And who knows? In ten years' time we might all be using 32-bit samplers!

In hindsight many people feel that, no matter how good the IFF 8SVX format has been, it would have been better to concentrate on producing a more general audio standard. This could have considered the problems related to things like the handling of various types of sample resolution (8-bit, 12-bit, 16-bit and so on), the inclusion of MIDI data (sysex messages for setting up MIDI-controlled sampling equipment, for instance), and more.

This, as you can imagine, is quite a job to tackle but; over the last few years, Apple Computers (of Macintosh fame), along with a lot of other interested parties, have been getting together to produce a standard for something known as an Audio IFF File. This has adopted the IFF-style 'identifiable chunk' philosophy and, to encourage widespread use, Audio IFF chunk details are now available to anyone who wants them.

Why, you may ask, does Audio IFF get a mention? Firstly Audio IFF chunk definitions have been registered with Commodore along with all the other third-party chunks and now represent an integral part of the Amiga's IFF standard. Secondly, and perhaps more to the point as far as end users are concerned, Microdeal's *Clarity 16*, and many other forthcoming 16-bit samplers, are almost certain to provide Audio IFF type file storage schemes. (Incidentally, there is an alternative multiple resolution IFF sound sample chunk, called SAMP, registered with Commodore, but this seems unlikely to win any further support now Audio IFF is here.)

However, Audio IFF does have a few disadvantages which have already come to light, at least as far as developers are concerned. It is reasonably complicated and many of the issues it addresses are not of immediate concern as far as the loading and saving of 16-bit sound samples is concerned. One solution, which would eliminate a lot of preliminary development problems, is for software houses to opt for a simpler standard.

THE AVR FORMAT

This has been designed by Audio Visual Research and is already in wide use on the Atari ST with products like *Replay 16*. AVR is a simple format consisting of just some header information followed by the sample data. Since Audio Visual Research are doing the *Clarity 16* development work, I think it is fairly safe to say that we are going to see AVR appear on the Amiga scene – if only as an interim measure while programmers get to grips with Audio IFF. AVR support will also be good news on a practical level because it means that by using utilities like *CrossDOS* we'll gain immediate access to all the 16-bit samples now being created on the ST (and why not – the Amiga has already stolen the limelight from the ST, it might as well steal its 16-bit samples too!)

Well, that's about it as far as sound sample formats and sample files go. However, one thing's for sure: the next twelve months are going to be very interesting as far as Amiga sampling is concerned. AS

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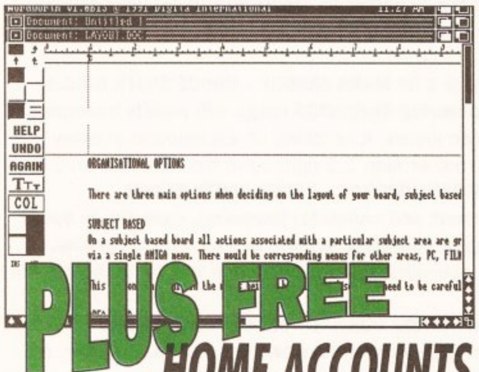
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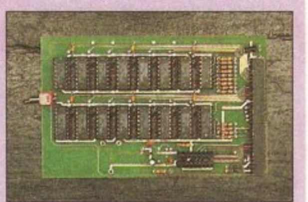
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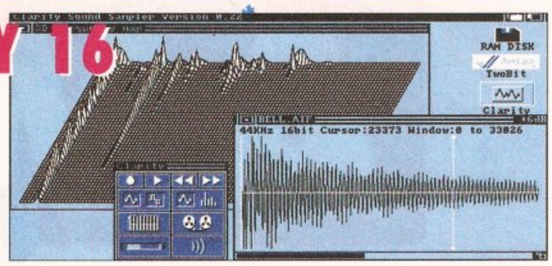
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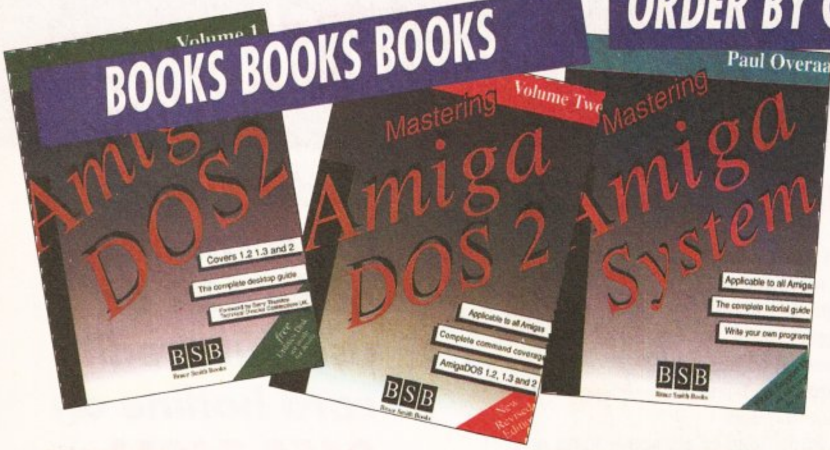


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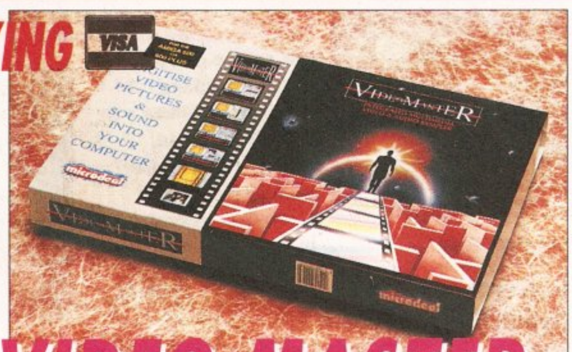
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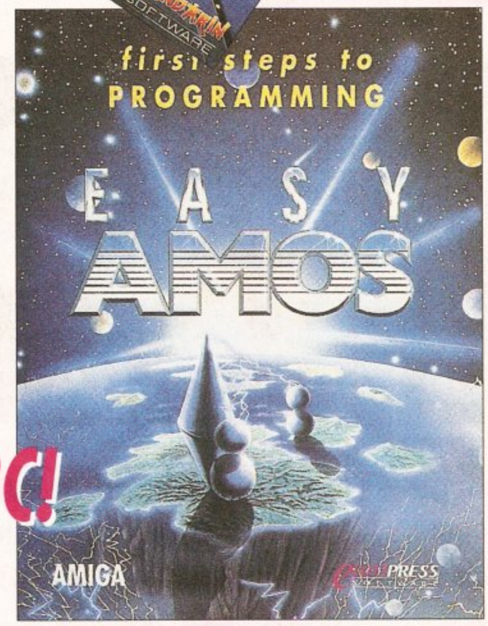
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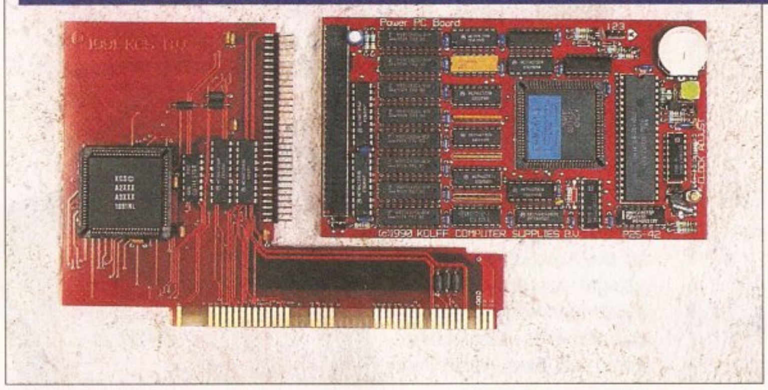


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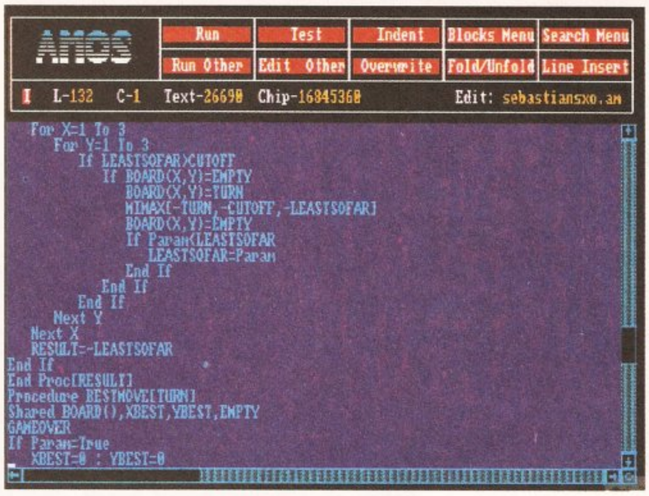
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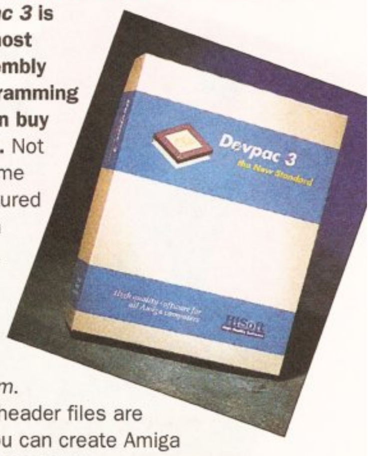
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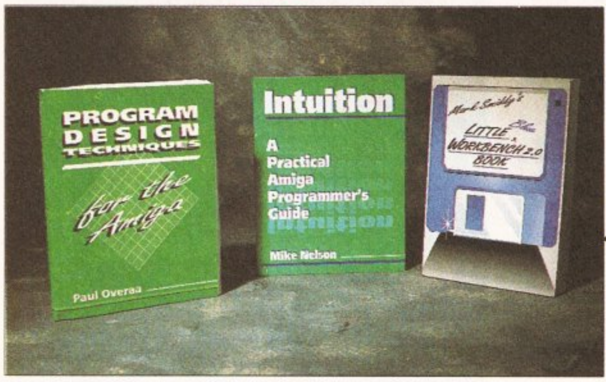


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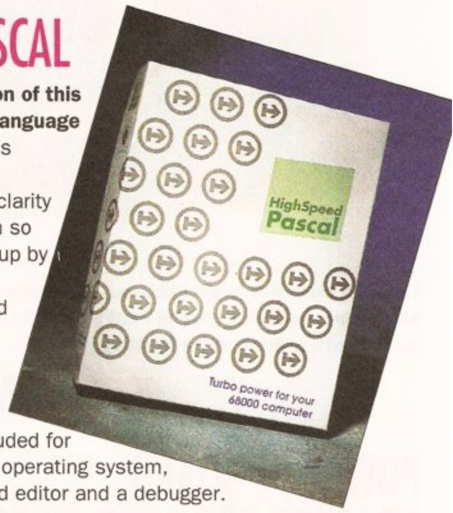
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SAILING THROUGH C

In this month's programming tutorial: Toby Simpson shows how C enables you to go around in circles, and to deal with vast arrays of strange characters

Some computer languages, such as BASIC and Pascal, make life easy for the programmer who wants to deal with text information. But C takes a much more elementary approach: if you want to do anything with text information, such as printing how many letters there are in someone's name, then you really need to understand exactly what a string is.

A string is an array of characters. Um, OK, so what is a character, or an array for that matter? It is often said that once a prospective C programmer understands character arrays and how to manipulate them then they understand the language. Once you've crossed this barrier, everything else is plain sailing, so don't worry if it seems a little bit tough to start off with.

So, let's get straight on to the subject in hand. A character is a single letter, number, space or punctuation mark. A string is made up of a long line of these next to each other, usually with a special character at the end to say 'end of string'. In C, this is usually a zero (also referred to as a NULL). Programmers call this setup a 'null - terminated string'. So, what's an array then?

ARRAY OF HOPE

An array is a similar list of items which share the same variable name, each with its own unique reference number. In last month's installment we talked about integer variables, and we declared them like this:

```
int age;
```

This gives us a single integer variable called **age**. That variable can hold any number between –32768 and +32767. (It may seem like an odd choice of numbers, but it does make sense – honestly! For those of you who are interested in finding out why, work out what those values are in binary.) So, what if we wanted to store ten peoples' ages? Well, the obvious method of doing this from what we already know would be to declare ten variables:

```
int age_1, age_2, age_3,
age_4 ...and so on
```

It is quite plain to see that once we wanted, say, 1000 ages then this would become ridiculous. Even sillier would be the 1000 lines of **scanf**s we would need to read these in. There has got to be a better way of doing this in C, and there is. Using our example of ten ages, we can declare an array instead:

```
int ages[10];
```

A GOOD PLACE TO START

What we have done here is to declare an array of ten items called **ages**, numbered from 0 to 9.

Remember: you should make a mental note of the fact that the numbering of arrays always starts from 0. It's a common mistake to assume that it starts from 1, which leads to all sorts of elusive bugs.

If we wanted to set the fifth age in the list to 7, we could do this:

```
ages[4] = 7;
```

Very handy! Notice, incidentally, that element 4 in the array is the fifth item, as numbering starts from 0. This will be even more useful when we write a small program to set all 10 ages to 0. This will introduce us to the concept of 'looping'. To see what this is all about, let's examine this small program fragment:

```
int loop;
int ages[10];

loop = 0;

while (loop < 10)
    {
    ages[loop++] = 0;
    }
```

Lost? Well, we have introduced several new things here. The **while** statement is the first one, and is very easy to understand. Essentially it means: "While the statement within the brackets remains true, execute the code within the squiggly brackets". In this case, while **loop** is less than ten, it executes the line which sets the ages to 0. The other new surprise here is **loop++**. This is functionally the same as:

```
loop = loop + 1;
```

loop++ is just a quicker way of doing it – we can throw the **++** in straight after we use the **loop** variable. The technical term for this is 'post increment', meaning: use the variable, and then add one to it. We could have used pre-increment, which would have added one to the variable before we used it. In this case that would have introduced two bugs: firstly it would have meant we didn't set ages[0] to 0, and secondly we would have tried to set ages[10] to 0. Since array numbering starts from 0, ages[10] does not exist in this program and that would have caused it to write a 0 to an illegal memory location.

You may be lucky; the computer might not crash...

WHILE AWAY THE HOURS

There are many other methods of looping within C, but we shall stick with **while** loops for now. Getting back to the ages, let's expand the previous program, and instead make a routine that allows the user to enter 10 ages, and then prints the average on the screen. This one you can compile and run:

```
#include <stdio.h>

void main(void)
{
    int ages[10];
    int loop;
    int average;

    /* Input the ten ages ↵
into our array */
    loop = 0;

    while (loop<10)
        {
        scanf("%d", ↵
&ages[loop++]);
        }

    /* Reset the average
counter to 0 and add all ↵
ages together */
    average = 0;
    loop = 0;

    while (loop<10)
        {
        average = average ↵
+ ages[loop++];
        }

    /* Average is total of ↵
```

JARGON BUSTING • JARGON BUSTI

Binary – Base 2. We count in tens, this is probably because we have ten fingers. If we'd all been born with eight, (or sixteen even) then learning programming would be a much easier affair as we wouldn't have to deal with ridiculous decimal numbers such as 32767, which in binary is a nice round 111111111111111. In binary there are only two digits, 0 and 1 (or on and off, true and false, high and low, or whatever). Thus, counting to five in binary goes like this: 0, 1, 10, 11, 100, 101. Thinking back to your junior school days, do you remember having to write out columns for units, tens, hundreds and thousands? These are the powers of ten. In binary we use the powers of two, so instead you have columns for ones, twos, fours, eights, sixteens, and so on.

Hexadecimal – Base 16. This has sixteen digits, despite humans

```
all items divided by ↵
number of items: */
    average = average / 10;

    /* Print the result */
    printf("The average age ↵
was %d.\n", average);
}
```

This is a good example program for both arrays and simple looping, as it has two loops and some basic manipulation of arrays. You should try altering it to print other information about the ages, such as the lowest, highest, total and average. The only way to really learn is hands-on experience, so invest the time to play around with the routines.

STRINGING ALONG

So, how do strings fit into this? Well, as we said earlier, a string is an array of characters. Say we have the null-terminated string "hello world", and we want to find and print out how long it is. To do this, we need to scan each element of the array in turn until we find a zero, counting the number of elements as we go along:

```
#include <stdio.h>

void main(void)
{
    char test_string[20] = ↵
"hello world";
    int length;

    length = 0;

    while (test_string[len ↵
gth] != '\0')
        {
        length++;
        }

    printf("Length of %s was ↵
%d.\n", test_string, length);
}
```

More new things here. Firstly we use a new variable type, **char**, to define a string of a maximum of 20 characters in length. In this case we are not filling it, but we are putting the 11 characters that make up "hello world" into it.

Remember: even though our routine does not count the string terminator, the zero at the end, it is there! So, although our test string is 11 characters long, it takes 12 characters to store. This is another of the most common bugs in C programs: defining character arrays of a certain size and filling them right up, forgetting that the zero will spill over the end and cause more of those really hard-to-find bugs.

The other thing we have introduced is the operator **!=** which means 'not equal to'. In this case we are saying that while each successive character is not equal to 0, then add one to **length**.

Perhaps the most puzzling new thing is the way I refer to 0 as **'\0'**. C can be a real pain in a couple of instances, and this is one of them. There is a distinct difference between using **'** and **"**. Watch out for it. **"**s are for defining null-terminated strings. The others – **'**s – are used to define single characters. Last month we talked about formatting characters, such as **\n** to mean newline. We've also used it in this month's example programs. The newline is actually a single character, although it is shown as two: **** and **n**. C treats the **** character as special, meaning that "the character after the **** is a control character and will show what to do next.". If you try:

```
printf("\n\n\n");
```

you won't see a **** or an **n** in sight. This is because C has seen the **** and then looked at the following character in order to find out what to do. There are many possible combinations (as shown in the box below), of which **\0** is one, and it means a NULL character – the sort that terminates a string. You may now like to guess how the following will appear on the screen:

```
#include <stdio.h>

void main(void)
{
printf("'\\n\n\n\nn\\n\a\'");
}
```

If you get it right, there should be three **n**s, two apostrophes and two ****s on the screen. Finally, the screen should flash, due to the **\a**. It's important to realise that each of these escape sequences only takes up one character. Our string "hello world" with a newline at the end would be referred to as:

```
char test_string[20] = ↵
"hello world\n";
```

And would be 12 characters in length rather than 11 without the newline. It's worthwhile ensuring you understand characters, arrays and strings because as we proceed through this series they are going to pop up with increasing regularity.

CRYPTIC CHARACTERS

So what of the **%s** then? The **%d** we already understand: it allows us to print a decimal value onto the screen. The **%s** is to print a string. We pass it the name of our character array and it will print all the characters in the string till it comes to the zero at the end. In fact, what we have done here is to implement the existing C function **strlen**. We could rewrite our program like this:

```
#include <stdio.h>
/* string.h contains loads ↵
of handy string functions */
#include <string.h>

void main(void)
{
    char test_string[20] = ↵
"hello world";

    printf("The length of %s ↵
is %d\n", test_string,
strlen(test_string));
}
```

Now, why don't we try and get clever here and write a program that encodes text? We enter a string, and the program will print out a coded version for us. The code can be quite simple: we shall add five to each character number, so A would become F, and so forth:

```
#include <stdio.h>
#include <string.h>

void main(void)
{
    char string_to_code ↵
[256] = "";
    int loop;

    printf("Enter a string ↵
to code:\n");
    scanf("%255s", ↵
string_to_code);

    loop = 0;

    /* Loop through string, ↵
adding 5 to each character */
    while
(string_to_code[loop] != ↵
'\0')
        {
        string_to_code[loop]↵
= string_to_code[loop] + 5;
        loop++;
        }

    printf("The result is: ↵
\n'%s'.\n", string_to_code);
}
```

A very simple routine indeed. If you're feeling adventurous having ingested all of this new knowledge then perhaps you'd like to enhance the program so that it asks you at the start if you wish to either encode or decode, and then asks you for a key (the number added to each character) to encode it with .

The only thing that is new to us in this program is the use of **scanf** to read in a string. You can place a number between the **%** and the **s** to mean "maximum length of string". This stops the program from crashing if the user enters more characters than we have allocated for. We must also take into account the trailing zero that will also be appended to our string. AS

RGON BUSTING

only inventing ten. The letters A to F are used for the missing six. In hexadecimal (or 'hex'), F is 15, and our strange number 32767 is 7FFF. To distinguish hex numbers from other numbers in C, we prefix them with **0x**. For example, the number 0x10 is not equal to 10, but 16, since the columns are all powers of 16.

Hello World – The first thing anyone tries to print on the screen in any new computer language.

ESCAPE SEQUENCES

\a – Alert (bell). On the Amiga this flashes the screen, or with Workbench 2.1 or 3.0 it can make a bell sound as well.

\b – Backspace: go back one character position.

\f – Form Feed, or go to next page. On a printer, this would go to the next sheet. On the screen, this will clear the display.

\n – Newline. Or, move the cursor so it is at the start of the following line.

\r – Carriage return. Move the cursor to the start of this line.

\t – Horizontal Tab.

\v – Vertical Tab.

**** – The backslash itself. If you want to print a backslash you need this escape sequence to do it.

\' – Single quote.

\" – Double quote.

\ooo – Octal number. (This is how we use **\0** to mean end of string.)

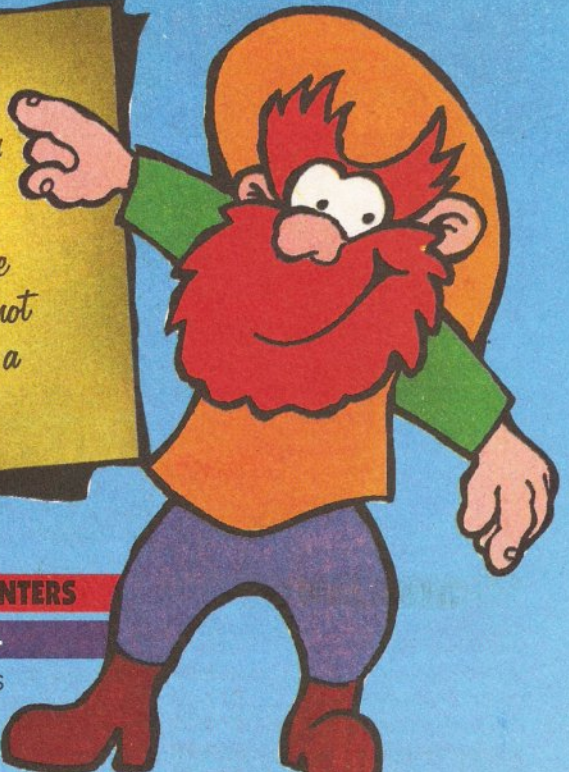
\xhh – Hexadecimal number (We could use **\x0** for end of string if we wanted, since octal 0, decimal 0, binary 0 and hexadecimal 0 are all equal.)

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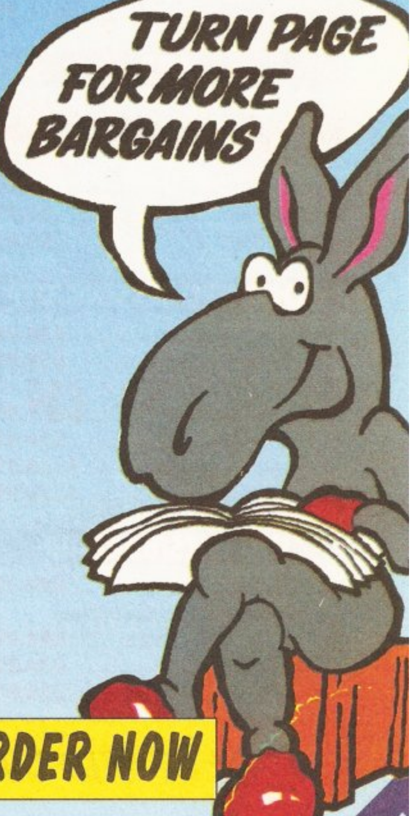
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Action Replay Users Club For help, tips, lists of pokes. Free. For more details contact Gordon Hagan, 66 Muirside Avenue, Kirkintilloch, Glasgow G66 3PR

Allbit Computer Club General hints and tips, advice, competitions, draws, shop. Entrance fee £1.50. Contact Mick, 170 Claughton Ave, Crewe, Cheshire CW2 6ET

Amiga Addicts Newsletter and open nights For info SAE to A Minnock, Clonkelly, Binn, Co Offaly, Ireland

Amiga Artists Club 34 Roundhay Mount, Leeds LS8 4DW. For Amiga artists, musicians and coders. Pirates not welcome. Free. ☎ KAM on 0532 493942, 5-8pm

Amiga Athens club PD swaps, tips, cheats etc. Free membership, just new PD or tips in exchange for our services. Contact Stefanos Papamichael, 9 Derfeld Rd, Patisia, 11144 Athens, Greece. ☎ 01/2027973

AmigaBASIC club Free bi-monthly disk, help for beginners and experts. Membership £10 per year. Contact Conran Ahmad, 15 Weybridge Rd, Thornton Heath, Surrey CR7 7LN ☎ 081 689 9102

Amiga Beginners' Club 110 Whitehill Park, Limavidy, Co. Londonderry BT49 0QG. Club to help newcomers. Bi-monthly club disk, and a small PD library. Membership £2 for a single disk, or £20 for every issue

Amiga Maniacs Help Graphics, sound, Workbench, programming, help on any topic. Beginners welcome. Free membership (by post). Contact Johnny, 8 Tan-y-Grais, Caernarfon Rd, Bangor LL57 4SD

If your group isn't mentioned, fill in the form at the bottom of the page to let us know about you

Amiga Helpline Contact Gordon Keenan, 21 Skirsa Place, Glasgow G23 5EE. Software/hardware help service, free PD, DTP problems sorted, plus general Amiga chit-chat. Send a stamp for full details. Membership £15 per year

Amiga Mania Bimonthly publication (tips, reviews, advice), licenseware, PD, discount software, hardware and accessories. Annual membership £10. Contact D Cryer, 88 Blackbull Rd, Folkestone, Kent CT19 5QS

Amiga Musicians' Club Membership gets you a disk with 50 IFF samples a month for 12 months. Also sample service. Membership £30. Contact Gavin Wylie, Guthrie Street, Carnoustie, Angus

Amiga Navigation Contact Dave Thomas 4a, Allister St, Neath, W Glamorgan. PD, advice, even small repairs and social evenings. Weds 7 – 9pm. Membership £10 per year

Amiga Network International 2 monthly club disk, reviews, advice. For info contact Phil or Steve: 434 Denby Dale Rd East, Wakefield, W Yorks WF4 3AE

Amiga PD Exchange at 27 Spa Rd, Preston, Lancashire, PR1 8SL. Chance to exchange PD, shareware, Fish and Tbag disks. £1 for disk and membership

Amiga Users' Klub, Windsor House, 19 Castle St, Bodmin, Cornwall PL31 2DX. Meets every Friday from 6.30-9pm, to expand members' knowledge of Amiga and to help solve people's problems. Contact Jack Talling

Amiga User Group – Fylde Contact Andy Wilkinson ☎ 0253 724607 25 Glen Eldon Rd, Lytham St Annes, Lancashire FY8 2AX. Meetings twice a month, newsdisk, tuition, technical support, Amiga advice Membership £15 per year

Amiga Users Club Contact Edward Metcalfe ☎ 021 7441430 49 Burman Rd, Shirley, Solihull, W Midlands B90 2BG PD swapping, games swapping (not copying), competitions, free membership

Amiga Video Producers' Group Meets quarterly in Swindon. For info SAE to J Strutton, 8 Rochford Cl, Grange Park, Swindon, Wilts SN5 6AB ☎ 0793 870667

Amiga Witham Users' Group 85 Highfields Rd, Witham, Essex CM8 1LW. Tips and Basic programs. K Anderson ☎ 0376 518271

Amigaholics Club Disk magazine covers PD, programming, music, art, DTP, and more. Free membership. Contact Kevin Bryan, 49 Coutts House, Charlton, London SE7 7AS ☎ 071-580 2000 Ext 240

Amigamania Bi-monthly newsletter (tips, advice etc), quality PD, discount hardware, software and accessories, free advice. Plus discount card for use in High St shops. Annual membership fee £10. Contact S Green, 9 St Lukes Walk, Hawkinge, Kent CT18 7EF

Amigos PD Large PD library – £1 for catalogue disk. For more details contact Roland Arnold, 16 Mayfair Ave, Ilford, Essex IG1 3DL ☎ 081-554 5160

AMOS Programmer Club Free membership, swap AMOS programs and PD, disk magazine and help for new users. Contact Gareth Downes-Powell, 6 Brassey Avenue, Broadstairs, Kent CT10 2DS

AMOS Programmers' Exchange Free membership. Swapping software and ideas. Help available. J Lanng, 7 Majestic Rd, Hatch Warren, Basingstoke, Hants RG22 4XD

AMOS Programmers Group John Mullen at 62 Lonssdale St, Workington, Cumbria CA14 2YD. Hints, tips, tutorials too. SAE for info. £10 membership for bi-monthly disk mag

Angus Amiga CDTV club Contact J Robertson, 22a High St, Brechin, Angus DD9 6ER ☎ 0356 623072. Review software, discuss anything Amiga. Free membership

Asia Amiga Association Newsletter, PD, information, advice, ideas, exchanges. Membership HK$250 per annum. For more info contact Pete Alex, Room 11c, Fortune Court, 4-6 Tak Hlng St, Kowloon, Hong Kong. ☎ 7245196

Astro PD Send SAE and blank disk for catalogue. Help and advice also available. Contact D Benson, 3 Skiddaw Court, Nunthorpe, Middlesborough, Cleveland TS7 0RD

Avon Micro Computer Club Graphics and animation, business and the chance to speak to professional users. £3 per annum. Contact Roger: 95 Downend Rd, Horfield, Bristol ☎ 0272 513224

Basic Programmers' Group 68 Queen Elizabeth Dr, Normanton, West Yorks WF6 1JF. Encourages the use of Basic, exchanges ideas and assists beginners to the language. Free newsletter Mark Blackall ☎ 0924 892106

Beaconsfield and District CC Contact Philip Lishman ☎ 0494 782298 27 Russell Court, Chesham, Bucks. Meetings at St Michaels Hall, St Michaels Green, Beaconsfield 7.45 – 9.45pm. Programming, gaming swapping PD, having fun. Membership £10 for 6 months

Bloomfield Video and Computing Beginners, video techniques. Meetings at Bloomfield Community Centre, Narberth, 7.30pm alternate Tuesdays. Membership £5. Contact Mrs Beryl Hughes, Nashville, 50 Glynderi, Carmarthen, Dyfed SA31 2EX ☎ 0267 237522

Bournemouth Amiga Club Problems, fun, social beginners welcome. Free. Contact P Chamberlain, 36 Homeoaks, 30 Wimborne Road, Bournemouth, Dorset BH2 6QA ☎ 0202 296714

BR & CJ Computer Club B Robinson at 23 Fairway Rd, Shepshed, Loughborough, Leicestershire, LE12 9DS ☎ 0392 72889 or 03922 841296. Regular disk mag packed with tips, reviews of games and serious software, game cheats database, demos and utils, very large PD library. Membership fee £1.25

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Camberley User Group Lectures, competitions, advice, meetings, free membership. For more info contact F Wellbelove ☎ 0252 871 545

Champion PD Club PD at 30p, newsletters, advice, help and more. Membership £10. Contact Steve Pickett, 31 Somerset Close, Catterick, N Yorkshire, DL9 3HE

Cheapo PD Club Non-profit making postal PD, newsletters, advice. Membership £5. Contact Jason Meachen, Ivy Cottage, Chapel Road, Beaumont, Clacton, Essex CO16 0AR

Chester-le-Street 16-Bit Computer Club Ground floor function suite, The Civic Centre, Newcastle Rd, Chester-le-Street. Meets Mondays from 7.30- 9.30pm. Exchange advice and swap tips. ☎ Peter Mears 091 385 2939

CDTV Users Club Technical support, news, compiling compatible software list. Free membership – just send SAE. Contact Julian Lavanini, 113 Fouracres Rd, Newall Green, Manchester M23 8ES

Chic Computer Club Full details with an SAE to STAMP, Chic Computer Club, PO Box 121, Gerrards Cross, Bucks. For info contact Steve Winter ☎ 0753 884473

Club 68000 Competitions, programming, music. Meets Harrogate Leisure Centre, Mondays 6.15pm-10pm. SAE to Chris Hughes, 59 Walton Park, Pannal, Harrogate, N Yorks, HG3 1EJ ☎ 0423 891910

Club Amiga £10 a year for PD and a 24-hr helpline service (091-385 2627). For more info send SAE to Chris Longley, 5 Bowes Lea, Shiney Row, Houghton Le Spring, Tyne and Wear

Club Futura Advice to programmers and beginners. Send SAE for info to G Holland, 16 Hermiston, Monkseaton, Whitley Bay, Tyne & Wear NE25 9AN

Comp-U-Pal Australian group for users in the outback. Newsletter, helpline, PD library. Membership A$24. Comp-U-Pal, c/o MDA, PO

GET YOURSELF LISTED

If you run a user group which isn't listed on this page, fill in the form below for your free entry. Send it to *Amiga Shopper* User Groups List, 30 Monmouth Street, Bath BA1 2BW. We reserve the right to refuse entries.

AS22

Group name ....

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Contact address ....

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Time of meetings ....

Type of activities ....

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Box 29, Knoxfield 3180, Victoria, Australia

Computeque Steve Lalley at Inskip Meeting Hall, Ashurst, Skelmersdale, Lancs on 0695 31378 7.45pm – 10.30 pm every Tuesday. From beginner to advanced user. Half year membership £2.50 children, £3 adults

Computer Club 16 Laton Rd, Hastings, East Sussex ☎ 0424 421480. A 16-bit club dedicated to being computer enthusiasts Membership costs £15 per year

Darlington Commodore Users Club News, discounts, cheap PD, advice, newsletter and more. Annual membership £5. For further info contact S Wheatley, 1 Ruby St, Darlington, County Durham DL3 0EN

Deluxe Cheats Disk User Group Steven Frew at 96 Campden Green, Solihull, West Midlands, B92 8HG. Software advice. Updates every 2 months! £4 for disk £2 for updates

Edinburgh Amiga Group Membership £5, includes free advice and PD. Contact Neil McRea, 37 Kingsknowe Road North, Edinburgh EH14 2DE with SAE

Enfield Amiga club For info contact Sean Clifton ☎ 081 8042867 32a Hoe Lane, Enfield, Middx Meet, swap, competitions, helping new users with problems

Enterprise PD 'Free' PD if you supply disks and postage. Membership £25 per year, £5 per month. T McLoughlin, 229 Barking Road, East Ham, London E6 1LB ☎ 081 472 0434

Eureka PD Small library with friendly service. 70p per disk. Contact Liam Allen, 5 Hartwell Close, Northampton NN2 8TT

Exeter 16 Bit User Group Andrew Deeley or Phil Treby at 25A Gloucestershire Rd, Exwick, Exeter, EX4 2EF. Meeting every Wednesday 7pm. Programming £6 per annum

Fylde Computer Club All aspects of computing. Meets 7pm, Lostock Gardens Community Centre, 2nd and 4th Wednesday of month. £15 per year, 50p on door. Contact Colin Biss, 90 The Esplanade, Fleetwood, Lancs FY7 7BQ ☎ 0253 772502

Galactik PD Swaps and sells PD. Contact E Newsome, 10 Crugan Ave, Kinmel Bay, Clwyd LL18 5DG. Demos, music, utilities, games, 99p for catalogue disk

Game Swap Club Swap original software and hardware. Membership £3. Contact Ade Ajidahun, St Andrews House, 125 North Road, St Andrews, Bristol BS6 5AH ☎ 0272 240399

Gamer-Link International pen-pal club for gamers. Free swap service, advice on tips and cheats. Life membership £5. Contact Stu or Dave, 28 Churchfield, Ware, Herts SG12 0EP.

GFA Basic Forum Contact J Findlay ☎ 0788 891197 or send SAE to 52 Church Rd, Braunston, Nr Daventry Northants NN11 7HQ. Free advice on programming in GFA. Also tutorial disk for sale. Beginners and advanced users welcome. Free membership

Gibraltar Amiga Users Club PD library, monthly newsletter, disk magazine, competitions, regular meetings (in the John Macintosh Hall). Membership from £6 per year. Contact David Winder, 7 Lime Tree Lodge, Montagu Gardens, Gibraltar ☎ 010 350 79918

Guru Masters PD demos etc, contact the Sheriff, 111 Sherbourne Rd, Banbury, Wolverhampton, WV10 9EU ☎ 0902 782277

Hampshire PD Club Mike Gallienne at 79, Carless Cl, Rownes, Gosport, Hants, P013 9PW on 0705 585323. Public Domain Disks at 35p. Monthly competitions. SAE for more info to the above address. £10 a year

Harleys PD Swaparama Public domain swapping by mail. Contact G Varney, 140 Weston Drive, Otely, West Yorks LS21 2DJ ☎ 0943 466896

Hereford Amiga Group Membership free, help, exchange of PD and shareware. Lotus Turbo 2 Quad Player Championship. Contact John Macdonald, Alma Cottage, Allensmore, Hereford HR2 9AT ☎ 0981 21414

Hermit Computer Club Hardware help and information, program swapping. Meetings 7-10pm, Mondays. Membership £3 per term, 50p per night. Contact John Maynard, Hermit Centre, Shenfield Road, Brentwood, Essex CM15 8AG ☎ 0277 218897

Hornesoft PD Over 2000 Amiga PD from 20p to 69p. Send SAE for free disk catalogue. Contact Chris Horne 23 Stanwell Cl, Wincobank, Sheffield S9 1PZ

HTS (Malta) Free membership. Contact K Cassar, Block 1 Flat, 6 H E Hal-Tmiem, Zejtun ZTN07 Malta ☎ 674023

Hyndburn Amiga Users Club Tuition, advice, PD, and more. Meets Mondays, 7pm, at the Canine Club, Accrington (£1 on the door). Contact Nigel Rigby, 7 Brecon Avenue, Oswaldtwistle, Lancashire BB5 4QS ☎ 0254 395289

In Touch Amiga Penpals, contacts, PD, swaps £2.50 per year. For more information contact P Allen, 0342 835530, PO Box 21, Lingfield, Surrey RH7 6YJ

Independent Commodore Products Users' Group Biggin Hill Library, Church Rd, Biggin Hill, Kent. Meets most Thursdays from 7.45-9.45pm. Lectures and open nights. ☎ John Bickerstaff after 8.30pm 081-651 5436. Also national network of user groups. Contact individual groups for details on activities, cost, meetings etc:
Andover ☎ R Geere 0264 790003
Coventry ☎ W Light 0203 413511
Dublin ☎ G Reeves 010 353 12 883863
Leeds ☎ R Eyre 0532 487691
Macclesfield ☎ P Richardson 0298 23644
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JJC Amiga correspondence course £50 per year. Contact PO Box 19, High Wycombe, Bucks HP11 1UF. ☎ 0494 983347

Kent Youth Computer Group Contact Jim Fanning ☎ 0233 629804 North Youth Centre, Essella Rd, Ashford, Kent. Meetings at the North Youth Centre, Thursdays 7 – 10pm computer fair visits, video and DTP work, monthly newsletter Membership 40p per month

Lothian Amiga Users Group Contact Andrew Mackie ☎ 0506 630509 52 Birniehill Ave, Bathgate, W Lothian EH48 2RR Advice and help in buying hardware, software etc, group buying, dealers' circulars welcome. Membership free

Maritime Amiga Club Maritime computing, interact with seafarers ashore on Amigas. Contact CDR K Osei, GN Ships Refit Office, 51 Rue de la Bretonniere, 50105 Cherbourg, France. ☎ 33 33225447

Marksman (Trojan Phazer user group) Contact David Green, 67 Thicket Drive, Maltby, Rotherham, S Yorkshire S66 7LB Promotes use of the Trojan Phazer, swaps PD and own programs, disk magazine

Mystery Game Swapping Send a game and receive a mystery one back. Deborah Tully, 08 Lime Court, Pendleton, Salford, Gtr Manchester M6 5EG

N Ireland Amiga User Contact Stephen Hamer, 98 Crebilly Rd, Ballymena, Co Antrim BT42 4DS. Disk based mag £2.50 per issue. Free PD, SAE for further info

New Hall Amiga Users Club Games, graphics, music, Workbench programming. Meets 7pm every Tuesday, New Hall Social Club, 104 Bury Rd, Dawtenstall. Membership £5 per year, under 16s not allowed. Contact Bill Grundy, 115 Stanley St, Accrington, Lancashire ☎ 0254 385365

Numero Uno PD, swapping, competitions, pen pals. £3.50 per annum. Contact Dillon Eyre, 21 Burstall Hill, Bridlington, N Humberside Y016 5NP

Pascal Programmers Group Disk-based newsletter for HighSpeed Pascal users. Free membership. Contact Colin Yarnall, 93 Manchester Rd, Wilmslow, Cheshire SK9 2JQ

Pennine Amiga Club 26 Spencer Street, Keighley, West Yorkshire BD21 2BU. Free membership, free advice and a newsletter. Contact Neville Armstrong for more info ☎ 0535 609263

Perth and District Amateur Computer Society For further information contact Alastair MacPherson 137 Glasgow Rd, Perth. Meetings third Tuesday in every month, 8pm. General advice, talks, Amiga PD. Membership £6 or free for under 16s

Pete's PD PD from only £1 per disk. Send 50p for disk catalogue to Peter Garrett, Chestnut Cottage, White Lion Road, Amersham, Bucks HP7 9JR

Public Domain Exchange Demos, music, utilities, animation. Annual fee £8 Contact D McLeish, 26 Taunton Ave, Leigh, Lancs WN7 5PT

Public Domain User Group Swaps PD, provides advice. SAE to 12 Oxford Rd, Guildford, Surrey

PUG Contact S Jackson ☎ 0446 772331 Whitebeam Cottage, Trerhyngyll, Cowbridge, S Glamorgan Cheap PD library, swap hints, reviews, articles etc. Send an SAE for further details

Redburn Computer User Group Contact Paul Armstrong ☎ 0294 56003, 12 Highfield St, Kilwinning, Ayrshire KA13 7BN. Meetings at the Redburn Community Centre, Dickson Drive, Irvine. Group meets every second Wednesday from 5 Aug 92, 6.45 – 9.30pm. Help, ideas, PD and shareware, graphics and business. Membership 75p per meeting; £7 per year

Rye Computer Club Swap/meet at the Rye Community Centre. For info contact Oliver Campion, 71 The Mint, Rye, E Sussex TN31 7DP ☎ 0797 222876

Serious Amiga Users Membership £5, £1 admission. Contact J Kucak for more: ☎ 0706 290387. Fortnightly meetings 7.30-11 at the High Crompton Conservative Club

Shieldsoft PD at Wilmar Lodge, 13 Churton Rd, Rhyl, CLwyd.LL18 3NB. Write for more information. Basic programming help. Advice on the CLI and AMOS. Disks from only 50p to 80p. Membership free ☎ 0745 343044

Sherlock PD Quarterly disk mag, help and advice for beginners. 50p per disk. A Doyle, 44 Milton Street, Warrenpoint, Co Down, N Ireland

Shropshire Amiga Link Advice, monthly disk mag, PD £15 per year fee. Contact N Cockayne, 2 Dodmoor Grange, Randlay, Telford, Shropshire TF3 2AW ☎ 0952 591376

Slim Agnus 115 Brocks Drive, North Cheam, Sutton, Surrey SM3 9UW. Group meets the last Thursday of every month. PD library, BBS, advice from Amiga experts. Contact Philip Worrel.

Software City Swapping, competitions, club magazine. Membership £8. Contact N Richards, 9 Hollis Close, Manor Estate Farm, Rawmarsh, Rotherham, S Yorks S62 7LX or ☎ 0709 526092

Software Exchange Club Free help and advice. Contact Michael Lacey, Fern's Post Office, Enniscorthy, County Wexford, Republic of Ireland

Software Exchange Service 13 Bournville Lane, Stirchley, Birmingham, West Midlands B30 2JY. For more info ☎ Michael Pun 021-459 7576

South 16 Bimonthly mag and disk, also PD library. £10 per year. Send SAE to Bruce, PO Box 16, Southampton SO9 7AU

Southend Team Music, PD. Free membership. Contact Scotty, 52 Prince Avenue, Southend-on-Sea, Essex SS2 6NN ☎ 0702 333974

Southport Amiga Users Advice, friendly evenings Mondays at 8pm. No charge, discounts from local store. For info contact Michael Mitcham, 5 Easdale Drive, Ainsdale, Southport, Mersyside ☎ 0704 79936

South Wales Club Newsletter, PD library, free newsletter, programs, help and advice. For more info contact D Allen 53 West Avenue, Trecenydd, Caerphilly CF8 2SF

Steel PD, cheats, ideas, music, art, programming, hardware mods. Free membership (postal only). Contact James Whitehead, 33 Middle Cliffe, Drive Crowedge, Sheffield S30 5HB

Syntronix Editman and Genlock To solve editing problems and factory service contract complaints. 24p postage for newsletter. Contact Andrew Keenan, 75 Whitefield Road, Penwortham, Preston, Lancashire PR1 0QR ☎ 0772 745110

Twilight Advice on hardware and software,Fred Fish PD. Free membership, disks 50p each. Contact 13 Mavis Court, Ravens Close, London NW9 5BH

UK Subs The Hanger BBS, trading post for PD files, swapping. Free membership. Contact Diddy / Arklight ☎ 0525 875518

Unique Styles Derek at 15 Montgomery Rd, Highbrooms, Tunbridge Wells, Kent ☎ 0892 518319. By post only. For Amiga artists, programmers/musicians. Free membership

Video Editing Club Invites DTV users for titling and editing. Quarterly magazine, send SAE for details to Danny Fisher,3A Thornbridge Road, Iver Heath, Bucks SL0 0PU

Video Visuals Exclusively for video producers, PD library, genlocking, digitising, quarterly disk magazine. Membership £10 per year. Contact Chris Brown, 4 Lavender Close, Witham, Essex CM8 2YG

Wardray Hern Consortium User group for Amiga and possibly others. Membership fees to be discussed and incurred. PD library to be set up. Also Hern connection – worldwide contacts wanted. SAE and disk to WardCon info, (AS) Warren Hardy, 21 Stockfield Ave, Fenham, Newcastle upon Tyne NE5 2DX

Warpdrive Help-line, PD library, bi-monthly disk mag, free drinks, competitions and infosheet. £15 per year. Contact B Scales 110 Burton Ave, Balby, Doncaster DN4 8BB ☎ 0302 859715

WCSPSA! Help available. PD disk of your choice and newsletter every month. PD at £1. Membership £25. For further info contact A Jamieson ☎ 0749 677609

Willow PD Free advice, disks only 90p each. Free membership. Contact Willow PD, 2 Longbridge Close, Sherfield-on-Loddon, Basingstoke, Hants RG27 0DQ ☎ 0256 882654

Wrexham District Computer Club PD, library, equipment loan. 10p to join, 50p to get in. Meetings at the Memorial Hall, Wrexham every Thursday, 7-10pm. Contact Paul Evans, 3 Ffordd Elfed, Rhosnesi, Wrexham, Clwyd LL12 7LU

Your Amiga Club Helplines, PD, social evenings, classes, club mag. Fee: £12, family £15. Contact P Higgins ☎ 0424 892269. The Old Chapel, Church Rd, Catsfield Battle, Sussex TN33 9DP

Zymurgy General Amiga computing. Free membership. For further info contact A Carr, 39 Sewlkirk Rd, Ipswich, Suffolk IP4 3JB ☎ 0473 725241

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- ☆ **GAME SWITCH** allows Games to be loaded without disconnection
- ☆ Includes **SCSI THROUGHPORT** at rear for further expansion
- ☆ **High quality** metal casing, colour and stylematched to the Amiga 500
- ☆ **Includes 'MRBACKUP PRO'** as well as Configuration/Format software

40Mb MODEL ONLY £229
100Mb MODEL ONLY £329
2Mb RAM Version: ADD £60 • 4Mb RAM Version: ADD £120

AMIGA 500 SOLDERLESS RAM UPGRADES

A500 512K RAM/CLOCK UPGRADE

ONLY £19.99 INC. VAT AND DELIVERY

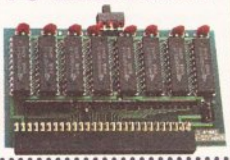
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☆ CONVENIENT ON / OFF MEMORY SWITCH ☆ AUTO-RECHARGING BATTERY BACKED REAL-TIME CLOCK ☆ COMPACT, ULTRA-NEAT DESIGN

'A500 PLUS' 1MB RAM UPGRADE

THE *FASTEST* AND EASIEST WAY TO UPGRADE YOUR A500+ TO 2MB RAM!

Simply Plugs into trapdoor expansion area ☆ Increases total RAM capacity to 2Mb 'ChipRAM' ☆ RAM On/Off Switch ☆ Compact unit size ☆ Only 8 low power RAM IC's ☆ High reliability

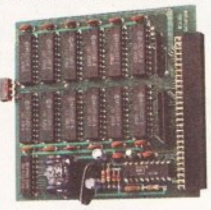


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1.5MB RAM BOARD

UPGRADE TO 2MB FOR ONLY £62.99!

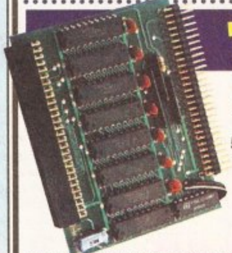
Fully populated board increases total RAM in A500 to 2Mb! ☆ Plugs into trapdoor area, & connects to 'GARY' chip ☆ Includes Battery-Backed Real-Time Clock ☆ Socketed RAM ICs on 512K / 1Mb Versions



Unpopulated RAM board with clock .... £ 34.95
With 1.5Mb FASTRAM installed..... £ 62.99

N.B.: The expansion board requires Kickstart 1.3 to operate - Kickstart 1.3 upgrade available from us for £29.95

'MEGABOARD'



With our MEGABOARD, you can further expand your A500's memory to *a total of 2MB* without disposing of your existing 512K upgrade (must be 4 x RAM-chip type, or not exceeding 9cm in length).

CONNECTS TO YOUR 512K RAM UPGRADE TO GIVE 1.5MB

ONLY £42.99

MEGABOARD needs Kickstart 1.3 to operate (Kickstart 1.3 upgrade available from us for £29.95). Installation requires connection to the GARY chip. Easy to follow instructions provided.

A500 EXTERNAL RAM UNIT

- ☆ Throughport for further expansion
- ☆ Very low power consumption
- ☆ Style matched to the A500
- ☆ RAM access LED
- ☆ RAM test/run switch
- ☆ Available fitted with 2Mb, 4Mb, or fully populated with 8Mb
- ☆ Optional PSU (allows Amiga to power other devices)



Incorporating the latest 'ZIP' DRAM technology, our new External Memory Upgrade allows the A500 / A500+ to be upgraded by up to a further 8Mb of auto-configuring FASTRAM.

N.B. Any memory fitted to this unit is in addition to that on your machine already, to a maximum of 8Mb on the external unit.

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You *can* improve software compatibility on your A500 Plus! By fitting our ROM switcher, you can alternate between the Kickstart 2 already resident and another version of Kickstart ROM chip, giving you the freedom of choice. Fitting is very simple indeed, and requires *no soldering* or special technical knowledge. Fitting allows two methods of switching; either by keyboard reset, or by an external toggle switch. **N.B. Kickstart ROM not supplied. A500 Revision 5A boards will require circuit modification.**

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KickStart/Workbench 3.0 • Fast 68020 processor • AGA chipset • CPU/DMA expansion port • PCMCIA expansion slot

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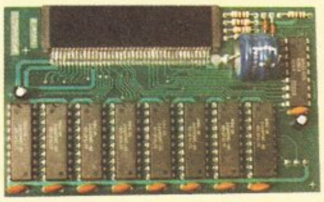
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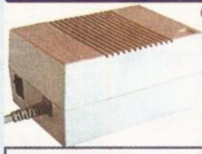
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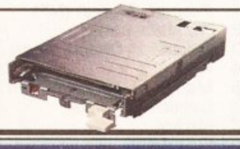
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(%) = Magazine review score

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(2D) = 2 drives
(NP) = NOT A500 Plus or A600

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2188 Card Sharp
2192 Storyland 2
2196 Assassins Games 14 (NP)
2198 21 Games
2222 Challenger (NP)
2223 Landmine / Sub Attack
2226 Mine Clearer / Scud Buster
2227 Bounce & Blast
2228 Question Tort
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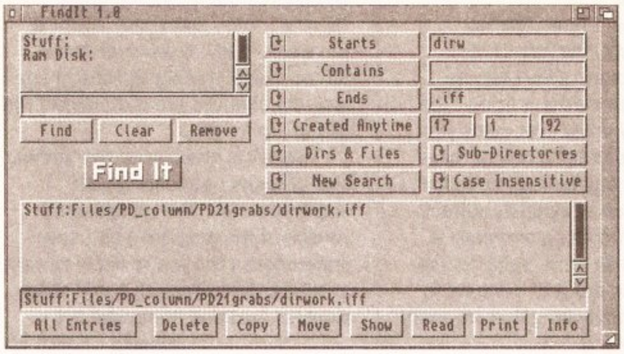
USEFUL SOFTWARE

442 DPaint Fonts Disks (4)
632 MSH (MessyDOS)
642 C Manual
901 The Comms Disk
1022 AMOS Update 1.34
1095 Database Workshop (2)
1097 DPaint / PSetter Clip Art (2)
1117 Geneaology
1451 ElectroCAD
1545 SpectraPaint V3.0
1550 FlexiBase V2.0
1569 Language Tutor
1606 Database Master 2.0
1878 Textplus Shareware WP
1880 DCopy & Utilities
1893 DICE V2.06A
1896 Desk Bench (3)
1906 PageSetter Clip Art (8)
1914 Slideshow Construction Kit
1951 King James Bible (4)
1987 Quickbench
2012 Draw Map V2.3D
2174 Anti-Virus V3.14
2180 Text Engine V3.0
2181 Amiga Fox DTP
2182 Window Bench (NP)
2186 Perm Check
2189 Print Studio V1.25
2190 Picture Convertors
2195 BBase 2
2197 UniCopy V1.0
2200 Little Bench (Plus only)
2202 Tarot 2 (2) (NP)
2220 Dungeon map V1.0
2221 Amigazer V3.0
2224 Landscape (NP)
2225 Budget
2229 MED V3.2
2230 Mega Monitor V3.2
2231 Hardware Hints Vol.1
2232 Hardware Hints Vol.2
2233 Opti Comms 2
2234 STD Code Finder
2237 Term V1.9C (WB 2 only)
2242 8-Colour Icons
2247 Slideshow Creator
2248 EdWord
2254 AMOS Compiler Update V1.34
2256 Race Rater V1.6
2257 Cyclops V1.0
2259 Magnetic Pagex V1.3
2276 DLab
2314 The Animation Construction Kit

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V028 BUDDBASE (UT)
V042 X-STITCH (UT)
V044 FORMULA ONE CHALLENGE (GA)
V045 MUSIC BOX (CH)
V047 DIRTY CASH (FRUIT MACHINE)
V051 MAGICAL YOUNG ARTIST (CH)
V059 PREHISTORIC FUN (GA) (UT)
V064 RESCUE II (GA)
V065 POWER PLANNER / DIARY (UT)
V066 HOTEL MANAGER (GA)
V068 VIRUS BUSTER V2.2 (UT)
V069 MAGICAL MIX-UP (GA)
V070 PAINTBOX (CH)
V071 BATTLECARS (GA)
V072 MONSTER ISLAND (GA) (UT)
V073 AMOS DATABASE V4.0 (UT)
V075 VIDEO LAB V1.0 (UT)
V077 POWERBASE V2.1 (UT)
V079 MUSIC ENGINE (AM)
V081 POOLS PRO V1.2 (UT)
V082 COLOURING BOOK 2 (CH)
V083 PICTURE HANGMAN (GA) (CH)
V084 GUESS WHO (GA)
V087 PUZZWORD (GA)
V089 SKYBASE 22 (GA)
V090 CONCERT BOX (UT) (CH)
V091 FUN TO LEARN (CH)
V094 ALL SQUARE (GA)
V095 KIDDIES CLIP ART 2
V096 MAGIC WASSOCKS 2 (GA)
V098 POWERTEXT V1.02 (UT)
V099 PEG A PICTURE (CH)
V100 SPRITE EDITOR +II (UT)
V101 MORSE CODE TUTOR (UT)
V102 DISTANCE ESTIMATOR (UT)
V103 GADGE 1 (GA)
V104 MONEY MONITOR (UT)
V105 SUPER SKODA REVENGE (GA)
V106 ORGANISER! (UT)
V107 EGO (GA)
V108 FAMILY HISTORY DATABASE V2.0 (UT)
V109 METAL LIFE (GA)
V110 MONEY SPINNER (GA)
V111 STOCK CONTROLLER V1.0 (UT)
V112 INVOICE/ORDER MANAGER (UT)
V115 ROOTS (UT)
V116 HOLO SQUASH (GA)
V117 JEWELS (GA)
V118 HARD DRIVE MENU MAKER (UT)



FindIt is probably the most fully-featured file and directory search utility yet – and you can find it on Fish disk 731

SOFTWARE *for* FREE

This month: the ones that didn't get away. Ian Wrigley surveys the latest haul of Fred Fish utilities to reach our shores, plus another bumper crop from the best of the rest of the public domain

Anglia PD has sent me Fred Fish disks 731 to 750, so this month I'll be looking at what the latest school of Fish has to offer, as well as checking out a variety of other offerings. Fred Fish, in case you're new to the Amiga scene, is a tireless individual (or these days I imagine is a number of people) who lives in the United States and is sent virtually every new PD and shareware program written for the Amiga. He collects them on to disks and sends them out, ten at a time, into the Amiga community. Many PD houses sell Fish disks, and it's become accepted practice to refer to a PD program by its Fish disk number. So, now you know where the products come from, let's check out the quality of the merchandise!

FINDIT

Fish disk 731

Written by Australian Gary Smith, *FindIt* is a PD program which provides one of the most complete methods of searching for a specific file that I've yet seen. It requires Workbench 2.0 or above, and is fully 'Intuitionised' – it works by double-clicking on its icon from the Workbench. Unlike other, similar, utilities, *FindIt* doesn't use a wildcard system of searching – that is, entering 'fr#?.iff' would find every file which began with the letters 'fr' and ended with '.iff'. Instead, there are spaces for entering text which the file or directory name starts with, contains and ends with. Any (or all) of these can be left blank, and they can all be 'inversed' – or, to put it another way, you can look for file or directory names which don't start with, don't contain or don't end with specific text too.

Other controls include the ability to search just for files, just directories or both, whether to search a specified directory only or to perform a recursive search – checking each sub-directory as well – and whether the search should be case sensitive or not. Finally, if you haven't been specific enough in your search parameters, resulting in a massive list of files, you can narrow the search down by entering a new parameter or two (such as the creation date from which to start, for instance) and only performing the new search on the existing list of files. Once you've found a file you can print it out, read it (if it's a text file) or view it if it's in IFF format. Finally, you can copy, delete or move any file once you've found it.

My only complaint with *FindIt* is that it seems to be a little slower than some of the other utilities that I've tested. Still, that aside, it's well worth getting hold of if you seem to spend hours looking for files buried hundreds of drawers deep on your hard disk.

Program rating....................8/10

GADTOOLSBOX

Fish disk 731

GadToolsBox, by Jan van den Baard, should save programmers vast amounts of time. It allows you to

RATING THE PROGRAMS

Just to be awkward, I rate the software that I review in two different ways, depending on what it is. Disk magazines, collections of clip art and the like are given a 'value for money' rating, since you're essentially paying for one thing, or group of things, on the disk.

Single programs which appear in a collection of others, or programs which I've downloaded from bulletin boards, are given a 'program rating', which reflects how good I think they are, taking into account usability, bug-proofness, my own particular (or should that be peculiar?) tastes and so on. Both ratings are out of a maximum possible 10.

BEGINNERS — BEGINNERS START HERE — BEGINNERS

What is PD?

PD is a general term which many people incorrectly use to refer to all freely-distributable software. In fact, PD (which stands for Public Domain) software is only one branch of this area; the other main one is shareware.

Essentially, PD software may be copied and used by anyone, although some authors place restrictions such as not allowing a PD library to charge more than a certain amount for the disk.

Shareware, on the other hand, should be treated more like commercial software. Although you are allowed to copy and pass around shareware programs, if you like one then you should pay the requested fee to the author – it's normally around £15 or less, and often entitles you to an upgraded version or a printed manual. Paying your shareware fees encourages software authors to write more programs – and if they don't, the Amiga scene will be a poorer place. Don't think that you're paying money for nothing, either – often hundreds or even thousands of hours of work have gone into creating a program, and it's only right that the programmer receives some reward for his or her work.

The third branch of software that we cover here is called licenseware. This is a form of shareware which is licensed to one (or more) PD libraries. In essence, when you buy a licenseware program you are buying shareware and paying the license fee at the same time. For this reason, you should treat any licenseware that you buy exactly as you would treat a piece of full-price commercial software – don't pass it around to your friends. You've only bought the right to use it yourself.

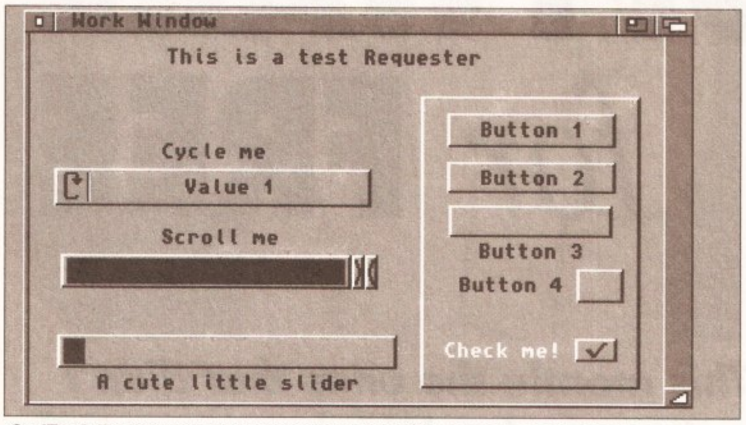
Can I pass other people copies?

Yes – that's the way that PD reaches a wider audience. Just make sure that you have followed the author's requirements for distribution. These are normally things like not charging more than a certain amount for the disk, or that you make sure that all the original documentation is included on the disk.

You can also pass on shareware – but not any registered copies of programs. If, when you pay your shareware fee, the author sends you an improved version of the program, then be careful not to give that out. Only pass on unregistered shareware.

You should not, of course, pass on licenseware – it should be treated in the same way as registered shareware.

create your program's user interface – gadgets, menus and the like – graphically, and will then generate source code in either C, assembly language or Oberon. It's extremely powerful, without sacrificing any ease of use in the process.



***GadToolsBox* allows programmers to graphically and easily create a user interface for their programs – it produces all the source code for you**

Creating a window is as simple as clicking and dragging wherever you want to place an object – slider, button, check box, text or whatever. If you don't align them properly at first, don't worry – there's a menu item available which does just that, even, if you want, duplicating sizes so that they're all identical.

Menus are created just as easily – both main menus and sub-menus are catered for. Want a menu choice to be initially checked or dimmed out? No problem!

Really, the range of facilities in this program is almost obscene. Even the documentation supplied is excellent. To be honest, it's amazing that this program is freeware; I'm sure that plenty of programmers would pay a shareware fee if one were requested – after all, it will save hours of work.

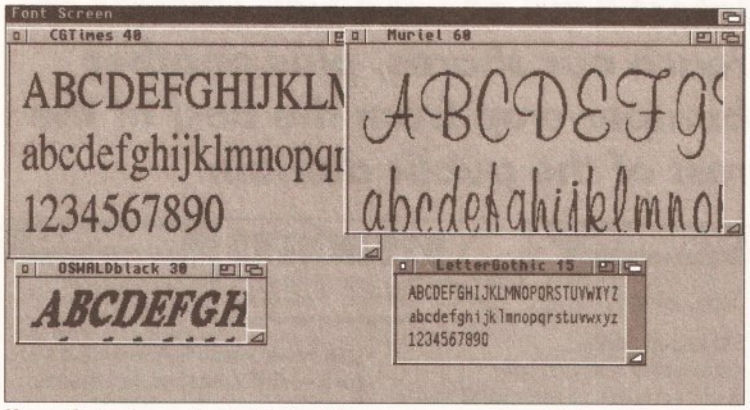
There's only one complaint that I really feel compelled to make: Jan earnestly recommends that anyone who can should go and see U2 playing on their *Zoo TV* tour. To which I would respond: Get a life, man! They're dreadful!

Program rating....................9/10

FONTVIEWER

Fish disk 732

Another utility by Gary Smith, *FontViewer* does exactly what its name suggests. It will display up to 30 fonts at once, each in its own window, at any size, and each with 30 lines of user-definable text. It supports Workbench 2.0 outline fonts, ColorFonts, selectable screen resolutions and can show the fonts in bold, italic and underline forms.



If your fonts drawer is the biggest directory on your hard disk, then *FontViewer* will be invaluable, allowing you to view up to 30 at a time

That's about it, really. A simple utility, but one which will be invaluable to anyone whose disk is loaded up with fonts. You know the situation: "I just know that I've got the right font here somewhere, but I'm damned if I know what it's called – and I've got more than 70 fonts to search through." Well, at least *FontViewer* speeds up the searching.

Program rating....................8/10

MEGAD 2.0

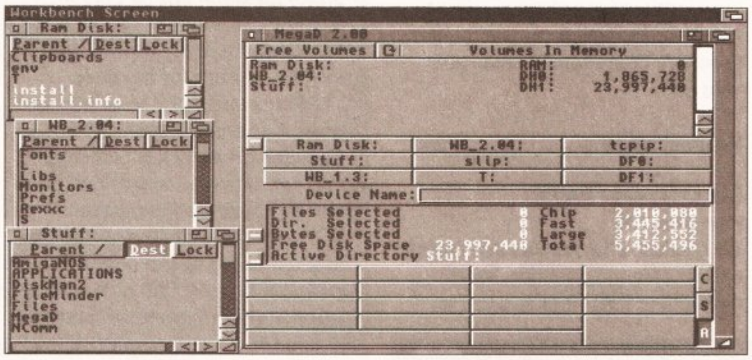
Fish disk 736

OK, right, stop it now. This is, without a doubt, the most fully-featured directory utility ever. Its documentation claims it to be "The best directory utility ever made for the Amiga computer". Well, if 'best' equals 'most frighteningly complex', that description is certainly correct!

Oh God. This program really is complex. As I sit here, trying to use the program in order to evaluate it, I'm left with the feeling that life really is too short. For a start, the documentation is about 50 pages long, while the tutorial – which is the recommended starting point for anyone not familiar with the program – runs to a alarming 126 pages. Still, I'm the reviewer, so I struggle on...

> **"The best directory utility ever made for the Amiga computer"**

Right. Several hours later (well, it feels like it), and the real power of this program is beginning to become clear. My initial feelings still hold – this really is one of the more complex utilities I've come across – but I can now appreciate that the complexity is because of the enormous range of features. For example (and this is one of the more 'minor' features) it's possible to copy files and directories to multiple destinations at once. For instance, if for some strange reason you wanted to copy files from a floppy to your RAM disk, another floppy drive and two partitions of a hard drive, that's no problem – just select the destinations you want, the files you want to copy and hit the Copy button. As a default, every file you select will have its '.info' file automatically selected too, so there's no messing about doing that by hand. (Of course, this can be turned off if you want.) Likewise, you can easily copy from multiple sources to one destination.



MegaD – could this be the most complex directory utility ever devised?

The program is fully customisable, and can be configured to recognise file types and to activate programs which can deal with whatever program you select. There's the facility to automatically run archiving programs such as *LhA* and *LhArc* from within the utility. There's... well, just about anything you want, really. If you ever found SID or a similar utility limiting in any way, the chances are that *MegaD* will do the job for you.

MegaD is shareware; the author, John L Jones, requests a $30 registration fee. The unregistered version of the program won't save preferences (and you're likely to want to customise it severely), and slowly disables facilities the longer it's running – which is a neat idea, and one I haven't run into before.

This program really can be recommended for the tech-heads out there. I suspect, though, that many people will take one look at the length of the tutorial file and run screaming back to whatever they were using before. So, in terms of features this program deserves a

Program rating....................10/10

while for user-friendliness, I have to give it just

Program rating....................3/10

ICALC

Fish disk 742

If you've ever been frustrated because the calculator utility supplied by Commodore isn't powerful enough for you, *Icalc* is what you need. This is a shell-based calculator which takes such a range of commands that it is virtually an interpreter for a mathematical programming language.

Icalc is as simple or as complex to use as you want (that was a pun, incidentally: the program can even handle imaginary numbers). Just typing in '3^6' will give you the value of three to the power six (729), but you can also type lines like 'Sum(n=1,100,1/n)', which would compute 1 + 1/2 + 1/3 + ... + 1/100. Or how about 'sin(fred = 45)', which would assign the value 45 to the variable 'fred' and also output sin(45).

There are even more features available; these are listed in the advanced user guide, and include the facility to work in any base from 2 to 35; user-selectable decimal precision; Boolean operators; arrays; and control-flow constructs such as if-else, while-loop and do-while-loop. User-defined functions are supported, and the program has a wide range of built-in mathematical functions and constants.

To use the program to its fullest

extent, you can create a list of commands and calculations in a text file and then ask *Icalc* to process the file. This is where the control structures, arrays and so on will really come in useful, and should mean that the program can cope with just about any mathematical problem you throw at it.

Overall, *Icalc* is a useful tool, and certainly one that any programmer, student or scientist should have around. It can be obtained from your usual Fish disk supplier, or can also be found in the *Amiga Shopper Shareware Collection Volume One*, as featured in last month's issue.

Program rating....................9/10

MEGAED

Fish disk 743

MegaEd is an extremely powerful text editor placed in the public domain by Wouter van Oortmerssen (or, as he likes to be known, $#%!). It's one of the most fully-featured programs of its kind that I've seen, and can certainly be recommended if you're on the look-out for something more than just a basic text editor.

> "There's no excuse for going back to the horrible days of the Spectrum!"

Its features are biased towards programmers, but even if you're not a code-head, you may well find that it does some other tasks more easily than your normal word processor. Features include the following:

● **A macro programming language.** *MegaEd* supports its own macro language and also has an ARexx port, so you can control it from other programs. Macro commands exist to do just about anything you could want, from setting default text paths through sorting text to executing a DOS command.

● **Database functions.** If you import records from a database into *MegaEd*, you can perform various functions on them. First, it's possible to easily define the field separator – so it doesn't matter whether your database prefers to separate fields with a comma, a colon or even a string of characters.

Then you can sort the records by any of the fields, print them as labels (each field on a different line), print them in nicely tabulated form (either specifying a width for each field or letting the program work it out for itself), delete a field or whatever. There is also a 'make index reference' function, which provides simple cross-referencing facilities. For example, let's say that you have the following data:

Fred, 3, 7, 4
Jim, 7, 9
Joe, 3, 9

Then the program would save a list like this:

3	**Fred**
	Joe
4	**Fred**
7	**Fred**
	Jim
9	**Jim**
	Joe

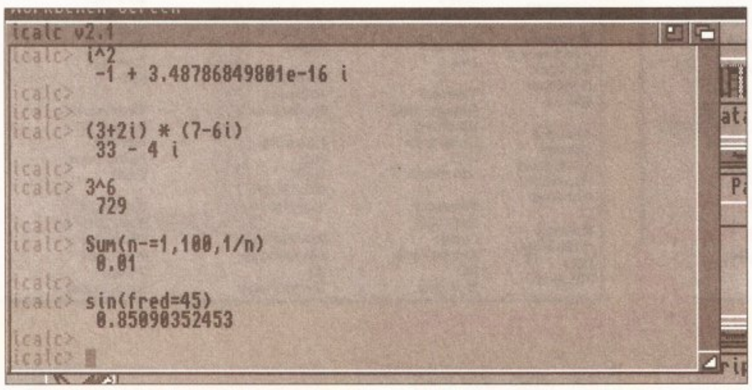
(Actually, come to think of it, I can't really work out a good use for this, but I'm sure someone will...)

● **Auto-indentation.** You specify the words or characters which should start and end indentation, and the program will do the rest. For instance, you would specify { and } as start and end indentation marks respectively if you were programming in C, while 'begin' and 'end' would be sensible mark suggestions for programmers using Pascal.

● **Multiple block support.** This is one of the few programs which allow multiple blocks to be selected. So if you are interested only in certain parts of a file, just mark all the relevant passages as blocks and select Save Blocks from the Edit menu. This goes for copying, pasting and deleting blocks, too.

As ever, there are some things about *MegaEd* that aren't perfect. First – and most importantly – there is no graphical representation of how far down a file you are – that is, there's no scroll bar (the documentation claims that there's a way of making one appear, but it didn't work for me). When you're working on a massive program, or even a text file, you really need to know whereabouts you are – even a simple 'x% of the way through the file' display would help. Secondly, the font which the program uses doesn't display ascenders and descenders properly. There's no excuse for going back to the horrible days of the Spectrum! And finally, *MegaEd* will only cope with files of up to about 70K in size.

That's probably fine for most programming tasks, but loads of text files are larger than this – and *MegaEd* is good enough that you'll find you want to use it for general processing as well as programming.



***Icalc* is a powerful calculator which supports a C-like language for performing complex calculations – including 'imaginary' numbers**

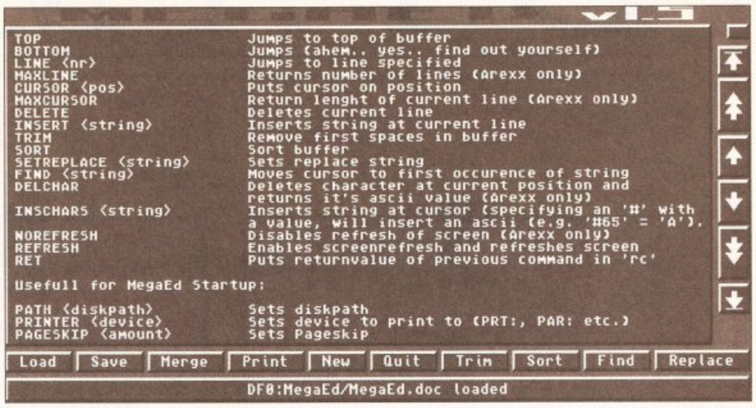
But this is still a great program. It has an attractive user interface, and can be highly recommended.

Program rating....................9/10

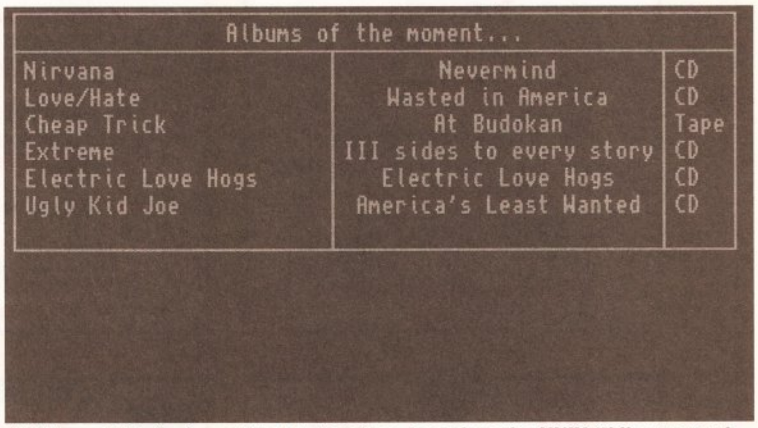
ATBL

Fish disk 746

ATbl is a table-formatting utility by Denis Gounelle based on the UNIX 'tbl' command. It takes a tab-delimited file as input and produces a neat table as output – to screen, printer or as an IFF file which can then be read into another program. IFF format is the most useful, as any font can be used, and front and back pen colours can be selected.



For all its (minor) faults, *MegaEd* is still one of the best text editors around



***ATbl* is a utility for formatting text tables, based on the UNIX 'tbl' command**

The program is run from the Shell, and takes as parameters the input file name, the format to output in, and an optional file name for output (if no output name is given, data will just be displayed on screen for text and IFF modes).

The actual formatting of the table is controlled by parameters in the text file. These are lines beginning with a period ('.'), and a fairly wide range of formatting options is catered for. For example, you can specify whether each column should be centred, left- or right-aligned; what horizontal and vertical dividing lines should look like; what font is to be used; what column width should be used; and so on.

I guess this program is of limited use to many people. But if you've large quantities of data which needs to be presented in tabular form, it could save hours of fiddling about.

Program rating....................7/10

PAPERBACK!

Fish disk 749

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continued on page 145

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Games.5
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Games.6
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Chess Tutor
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Zon

Games.7
Rally II
Battle Force

Games.8
Trek

Games.9
Amastermind
Landmine
Landscape
LVD
Sub Attack

Games 10
Cute Stuff
Cycles
Gravity Ware
Rot
Shanghai

Animation.11
Amyvewalker
Coyote

Animation.12
Anims
Pogo

Animation.13
Aerotoons
Tugrite

Animation.14
Atmovies
Shuttlecock

Puzzles.15
Puzz
Rubik
Word Puzzle
Word Search

Dos Utilities.16
Dos Manager
Sid
Tool Manager

Virus.17
Mem Check
No Virus
Virus Checker
Virus Control
Virus Utils
VMK
Zero Virus

Laser.18
Amidock
Conman
Post

Word Pro.19
Super Spell
Text Plus
Typing Tutor
U Edit

Copiers.20
Flash Copy
Free Copy
Paul Copy
P Copy
Super Duper

Sound.21
Multi Player
Octamed

Printer.22
Cass
Disk Print
Print Studio

Database.23
Addresser
Ami Check
D Base II
Data Easy

Picture.24
Startrek 1 IFF
Startrek 2 IFF
Startrek 3 IFF
Judge Dread.
Klingon IFF
Nymphs 1
Nymphs 2
Tea Pot
Two ships IFT

Picture.25
Fashion
Girls
Leapord
Nymph 83
Nymph 84
Nymph 85
Pic Base
Squirrel

Term & Mod.26
Term

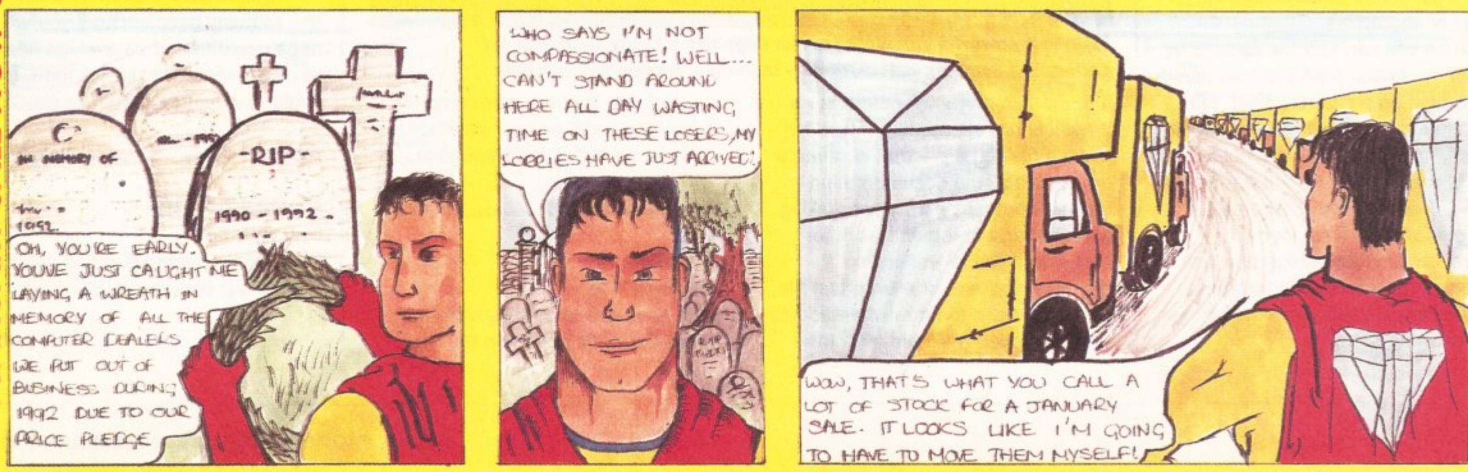
Term & Mod.27
NComm

PP Utils.28
PPAnim
PPLie
PPMore
PPShow
PP Type
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Archives.29
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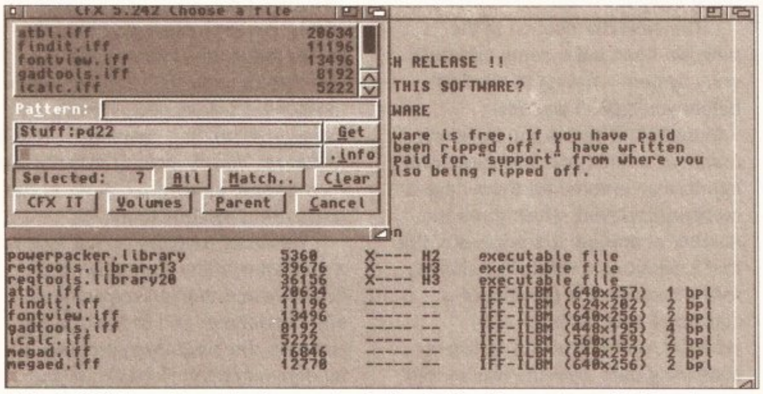
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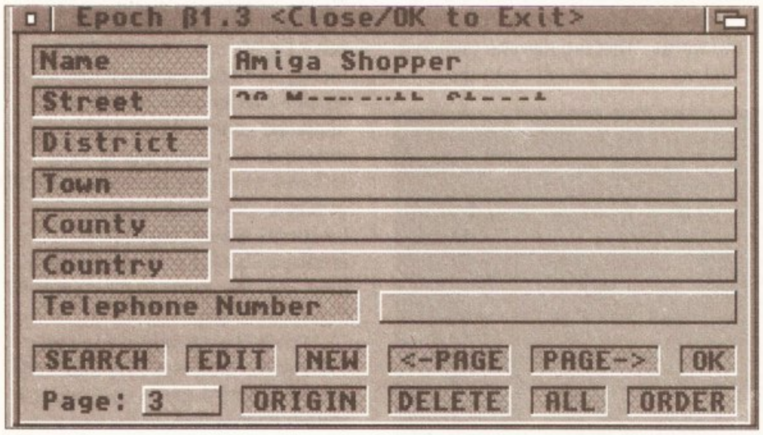
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continued from page 141

sides of the paper, *Paperback!* is the program for you. Until now, the only way was to hand-feed each sheet of paper into your printer, turning it over after the first page so that the second was printed on the reverse and so on. Bob Rye obviously got fed up with this; *Paperback!* is the result.



This is *CFX* in action. The foremost window is the Requester which has been produced by the '–r' option when calling the program. Behind is a Shell window, where the actual data is output. As you can see from this example, the level of detail produced when describing IFFs is excellent



***Epoch* is a compact little address book and calendar program. Unfortunately, it's not really easy enough to use to be highly recommended**

The program is launched from the Shell, and takes a maximum of four parameters. The easiest way to use it is just to tell it how many lines per page your printer will take, what the name of the input file is and whatever you want to call the processed result.

It then creates two new files, one of which contains the odd pages, the other the evens. So you print out the odds, take the paper, turn it over and print out the evens. Simple! If you want to know how much paper you'll be using, the '–S' flag just gives a summary of paper usage without actually creating the files.

If your document already has form-feed characters in place (many documentation files are already formatted, and altering this means that indexes aren't accurate), that's no problem – *Paperback!* will use them, rather than splitting up the pages itself.

And that, really, is that. No fuss, no mess, just output which is friendlier to the environment and easier on your wallet.

"Both CFX and Paperback! have found their way on to my hard drive"

Program rating....................9/10

CFX

Fish disk 750

And straight after *Paperback!* comes *CFX*, another program from Bob Rye. This is another freeware program, and is a great – and powerful – file type finder. Have you ever downloaded a file from a bulletin board and not known how it was compressed? Or wanted to know where all your .IFF files are on your hard disk? *CFX* will do all of this for you and more.

Although the program must be launched from the Shell, there is an option (-r) which lets you use a standard Workbench Requester to find the directories that you wish to examine. Basically, you select a file, directory or disk and set the program running. It will report back on the filetype of each file, along with file size, flags, and even some additional information – for example, IFFs have their dimensions and number of bitplanes listed.

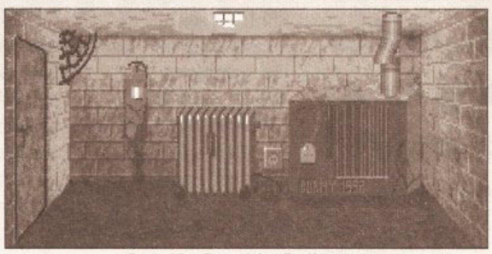
CFX can work on just one directory or will recursively examine up to 48 sub-directories. You can ask it to list specific file types – all IFFs, say – or to describe all files. It knows a wide range of file types; on my hard drive there were very few that it reported as 'unknown type', other than program-specific ones.

Bob Rye is clearly a programmer who doesn't waste his time producing esoteric utilities that maybe half a dozen people in the world will want. Both *CFX* and *Paperback!* have already found their way straight on to my hard drive, and both have been extensively used.

DELUXE PAINT TUTOR

Software Expressions disk U160

Ever wondered how some people create superb-looking logos and screen images, while the rest of use are still struggling away with the most basic functions of *Deluxe Paint III*? Well, this disk could prove to be the solution. The tutor program is called *Gator's Graphic Gallery*, and has been created by a guy called Martin Baumann. Essentially, it's a series of images along with instructions on how they were created. Martin is German, so some of his English isn't perfect, but the instructions are still easy enough to follow – and the graphics that he explains are stunning.



***Gator's Graphic Gallery* shows you step-by-step how to use *DPaint* to create pictures like this...**

The program is supplied on a self-booting disk, and paging through the instructions is a simple matter of hitting the right and left mouse buttons. Alternatively, you can use the numeric keypad to move to a specific page – there are 33 in all.

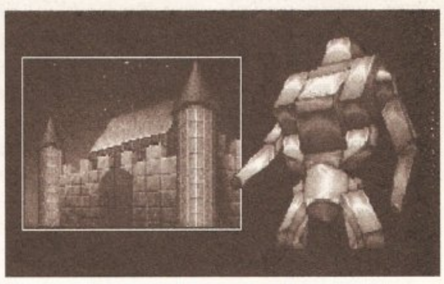
The illustrations cover such things as logos, 'electronic'-looking boxes and the like. The images are predominantly high-tech, which comes as no surprise when you take a look at what Martin's involved in – he seems to have been a member of just about every Amiga demo crew you've ever heard of!



...impressive logos like this...

My only real complaint with this disk is that sometimes Martin seems to skip over some of the steps involved in a particular graphic's creation. I'm sure that these steps were obvious enough to him, but to those of us with a little less drawing talent, it can take a while to work out just what's going on. Nevertheless, if you persevere then it usually pays off!

I'd recommend this disk to anyone who wants to get just a little bit more out of *DPaint* – and also to anyone who just wants to see the very best in Amiga-created demo-style artistry.



...or any style of high-tech illustration that takes your fancy

Value for money 10/10

They can certainly both be highly recommended.

Program rating....................9/10

STRIPIT

Fish disk 750

Hans-Peter Guenther has written this file-stripping program which will remove comments from any program language source code – as long as a configuration file exists or you create one yourself. The program's default is C, but it ships with configuration files for a couple of other 'languages' such as DOS and Shell configuration scripts. It would also be easy to write configuration files for programming languages such as Pascal (typically the config file only has two or three lines, which describe comment delimiting characters).

Whether removing comments is 'A Good Thing' or not is debatable. Sure, it reduces compilation time quite radically, but on the other hand an uncommented file in something like C might as well be written in Martian unless it's your own program – and even then, after a couple of months you'd have no idea why you wrote half the stuff you did. Still, for those who want to do this to their files, *StripIt* works fast, and didn't make any errors on the files I tested. The documentation can be difficult to follow, but there's no real problem: the options are so few that it's easy to work out by trial and error.

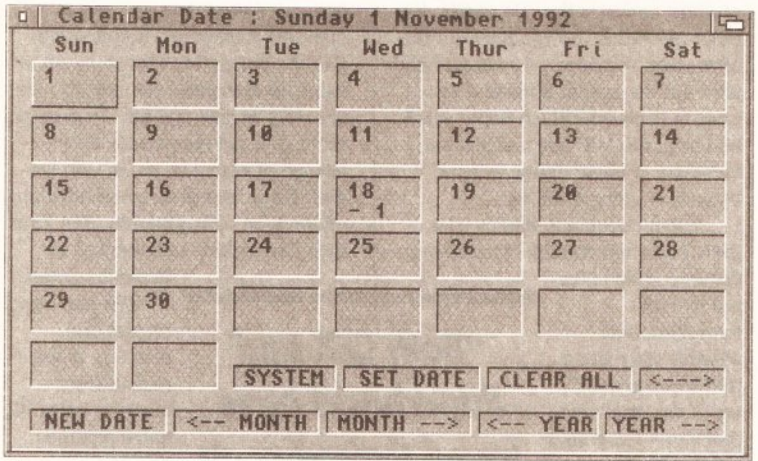
One word of warning: the way the program copes with multiple source files means that if you forget to specify an output file, your last source file will be overwritten with the program's output. So back up your files before you start!

Program rating....................7/10

EPOCH

NBS Disk U726

Epoch is a combined address book and calendar written by Jack Pritchard. It appears as a tiny window when first run, and is designed to be started when your Amiga is booted up – either by entering its name in your startup-sequence or by putting it in the WBStartup drawer if you're running Workbench 2.0. After that, both address book and calendar can be activated by clicking on the window to make it active and then either hitting Amiga-C or -A, or by selecting the name from the pull-down menu.



The calendar part of *Epoch* is reasonable – but suffers from a rather odd method of entering new data, which is shared by the address book section

The address book is fairly standard, and will allow you to have up to 284 records, each containing a maximum of seven lines of text. Oddly, there is no field for a postcode – which is something of a surprise for a program which was written in the UK.

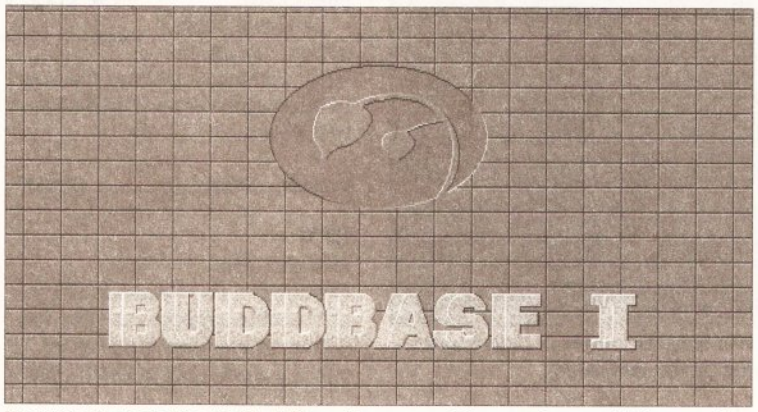
> **"this convoluted method... makes searching for a record easier"**

It's also not particularly easy to use. To enter a new record, you must remember to hit the 'Edit' button first – otherwise text will appear in the fields but will not be remembered. This is less than intuitive – I tried to use the program without using the doc file (as many people would) and entered data for a good five minutes before I realised that something was wrong. The reason for this somewhat convoluted method of text entry seems to be that it makes searching for a record easier – just type in the text that you want to find and hit the search button, without having to go into any special mode. Some people may see the benefit in this; me, I just think that it's an odd way of doing things.

The calendar section of the program shares the same odd data entry system – having to hit 'Edit' before you type in any new information. It allows you to view a month at a time, and any dates with information entered for them have a number displayed, which gives the number of entries. It's adequate, but that's about all – which is a shame, really, because the concept of a combined address book and calendar, perhaps with a facility for combining data from the two so that, for instance, entering "Lunch with Dave" will check and pull up Dave's address details, is very appealing.

The thing that really makes me a little cautious about the whole thing is that Jack starts his doc file with the words "This programme (sic) is a Test version, meaning that I am putting it into the public domain at this stage to see what sort of response I get to it." Fine, but personally there's no way I'm going to trust my address book data to a program which isn't the finished thing, and which may crash without warning. If you disagree, you're a braver man or woman than me, Gunga Din.

Program rating....................4/10



Now this is more like it! *BuddBase I* is a powerful, easy-to-use database with an attractive user interface. And presumably this is just the first version...

POOLS-TOOLS

NBS Disk U725

Pools-Tools is a pools predictor and perm checker. It's mouse-driven, which means that it should be easier to use – and faster – than those programs which force you to type in team names every week to make your predictions.

The programs come on an auto-booting disk, which requires 1Mb of RAM to run. Booting up produces a simple menu – perm check, the prediction program or instructions.

The perm checking program assumes that you're using a plan which has been provided or which you're made up yourself – it's possible to write your own perm plan using a word processor. Details are included in the documentation, and it all seems fairly simple. (I'm a horses man myself, so the intricacies of the pools are a mystery to me...)

The other program on the disk is a prediction utility – although just how accurate this is likely to be is open to debate: one of the options just gets the program to produce random numbers! However, if you want a slightly more probabilistic approach you can enter the results from previous weeks, and the predictor will use these results to produce suggested pools numbers.

If you like the program you can send £4.50 to the author, Paul Morley, in return for which you will receive *Dividend-Master*, an upgraded version of the two programs with a number of extra features which are disabled in the PD versions – including printing functions, a perm calculator, prediction based on teams' recent form, and the ability to save your default settings.

Pools-Tools is unlikely to make you a millionaire next Saturday, but you might find it fun to try – and it's almost certain that, if you use it to check next Saturday's pools without putting any money on, you'll find that it would have cleaned up...

Program rating....................7/10

BUDDBASE I

Deja Vu disk L/28

BuddBase I is a database written in *AMOS* by John Brain, and is disk-based – so even if you've only got a 512K Amiga you should be able to store a decent number of records. This program really was a pleasant surprise; too often *AMOS* databases are simple, primitively-written affairs with no real power, but *BuddBase* gives the impression of being a well-written, well thought-out package.

The user interface is an attractive greyscale 3D-type affair, and every button clicks down with a tiny red 'light' to show what you've selected. The program comes with a sample database to illustrate how to use the features – which are all totally intuitive anyway.

There are some limitations imposed, the most restricting of which is the choice of disk drive to use for storing data – only DH0: and DF0: are supported so if, like me, you use DH1: for your files you'll have to keep moving the database to

and from DHO: every time you want to use it. I guess that most people won't find this a problem, though.

Creating a new database is easy; you can have up to 18 fields per record, although there's no way to add new fields later. So, it would be prudent to make a couple of 'dummy' fields in case you want to expand the data stored later. The layout of the database on-screen is fairly limited – and each field can only contain 60 characters – but again, as long as you plan your database well, this shouldn't be too much of a problem.

Once you have added some data, you're likely to want to sort and find individual records. In both cases, the procedure is simple but powerful. You can sort by text or number, on any field, and the Find function allows you to search for any text within a field, or any number. Simple mathematical operators such as < and >= are provided enabling you to find a range of values.

> *"other database creators would do well to take a look at it"*

Really, *BuddBase* is an impressive program. Some of the operations are a little slow when performed on a floppy-based database, but putting the database on hard disk speeds things up considerably. Much thought has clearly gone into the user interface and ease of use of this program, and other database creators would do well to take a look at it when they're writing their own programs.

All in all, *BuddBase I* is a good example of what can be done in *AMOS*, and well worth considering if you're looking for a PD database; I can't wait for *BuddBase II*!

Program rating....................9/10

WHERE TO GET IT

There are two main ways to get hold of Amiga PD and shareware: from a bulletin board or from a PD library.

The advantage of using a bulletin board is that often the latest software is uploaded as soon as it's available. On the down side, you need a modem to connect, and you'll have to pay phone charges (and sometimes a connection fee to the bulletin board as well).

There are a growing number of bulletin boards with a wide range of Amiga software available for download. Check out 01-for Amiga (071 377 1358) and the Cheam Amiga Bulletin Board (081 644 8714). Another good option is joining CIX (the Compulink Information eXchange), which not only has Amiga software but also contains conference and file areas on a wide range of subjects, from politics to scuba diving, biking to Science Fiction. Many of the *Amiga Shopper* writers have accounts on CIX, so you can get first-hand advice on your problems, too. For more details, call CIX on 081 390 8446 (voice) or 081 390 1255 (modem).

If you don't want to use a bulletin board, the other way to get PD software is from a PD house. Many advertise in *Amiga Shopper*, and you'll find a comprehensive list of names and addresses at the end of this article. Expect to pay between 99p and about £2.50 per disk – there's often a discount if you buy in bulk, too. As for the difference between the companies which charge 99p and those which charge £2.50 – well, try both types. There are brilliant, totally professional PD houses which charge less than a quid, and there are totally incompetent (dis)organisations which charge more than twice that.

UK PD HOUSES

Amiganuts United
169 Dale Valley Road
Hollybrook
Southampton

AMOS PD
1 Penmynydd Road
Penlan
Swansea
SA5 7EH

Anglia PDL
115 Ranelagh
Felixstowe
Suffolk
IP11 7HU
☎ 0394 283494

Blitterchips
Cliffe House
Primrose Street
Keighley
BD21 4NN
☎ 0535 667469

Crazy Joe's
145 Effingham Street
Rotherham
South Yorks
S65 1BL
☎ 0709 829286

Deltrax PD
36 Bodelwyddan Ave
Old Colwyn
Clwyd LL29 9NP
☎ 0492 515981

Deja Vu
7 Hollinbrook
Beech Hill
Wigan WN6 7SG
☎ 0942 495261

Essex Computer Systems
118 Middle Crockerford
Basildon
Essex
SS16 4JA
☎ 0268 553963

George Thompson Services
Cucumber Hall Farm
Cucumber Lane
Essendon
Herts
AL9 6JB
☎ 0707 664 654

ICPUG
PO BOX 1309
London
N3 2UT
☎ 081-346 0050

NBS
1 Chain Lane
Newport
Isle Of Wight PO30 5QA
☎ 0983 529594

PD Soft
1 Bryant Ave
Southend-on-Sea
Essex
SS1 2YD
☎ 0702 466933

Pentire PD
10a Hag Hill Lane
Taplow
Maidenhead
Berks SL6 0JH
☎ 0628 666641

Riverdene PDL
30a School Road
Tilehurst
Reading
Berkshire RG3 5AN
☎ 0734 452416

Telescan Computer Services
Handsworth Road
Blackpool FY5 1SB
☎ 0253 22296

Sector 16
160 Hollow Way
Cowley
Oxford
☎ 0865 774472

Seventeen Bit Software
PO BOX 97
Wakefield
West Yorks
WF1 1XX
☎ 0924 366982

Software Expressions
Unit 4
44 Beauley Road
Southville
Bristol BS3 1PY
☎ 0272 639593

Softville
Unit 5, Stratfield Park
Elettra Avenue
Waterlooville
Hants PO7 7XN
☎ 0705 266509

Startronics
4 Arnold Drive
Droylsden
Manchester M35 6RE
☎ 061 370 9115

Vally PD
PO BOX 15
Peterlee
Co Durham SR8 1NZ
☎ 091-587 1195

Virus Free PD
31 Farringdon Road
Swindon
Wiltshire SN1 5AR
☎ 0793 512321

PRODUCT LOCATOR

HARDWARE • HARDWARE • HARDWARE • HARDWARE • HARDWARE • HARDWARE • HARDWARE • HARDWARE

Welcome to the *Amiga Shopper* Buyer's Guide, your regular guide to what's hot and what's not in the Amiga market place. It's designed as a simple-to-use yet comprehensive guide which will help you to make the right buying decisions. It may not include each and every product ever produced for the Amiga (that would take up virtually the whole of *Amiga Shopper*!), but you can rest assured that all major brands and models are here.

The Buyer's Guide will run each and every month and as new products are released and others discontinued, we'll be updating it accordingly. This month we bring you what is possibly the most comprehensive guide to hardware for the Amiga owner. Next month we'll be listing Amiga software...

AMIGAS

Model	Price	Memory	Total Chip	Total Fast	Processor	Speed (MHz)	Hard Disk (Mb)	Floppies	Comment
A600	£299	1 Mb	2Mb	4Mb	68000	7	No	1x880k	Replacement for now discontinued A500 Plus
A600HD	£499	1 Mb	2Mb	4Mb	68000	7	20	1x880k	A600 with built-in 20Mb IDE
A1500	£999	1 Mb	1 Mb	9 Mb	68000	7	No	2x880k	More expandable than A500
A2000HD	£1299	1 Mb	1 Mb	9 Mb	68000	7	40	1x880k	Exactly the same as A1500, but now includes hard disk
A2500	£????	1 Mb	1 Mb	9 Mb	68020	16	40	1x880k	Same as A2000HD, but comes with processor card
A3000	£3160	2 Mb	2 Mb	16 Mb	68030	16/25	50/100	1x880k	Available in several hard disk/processor configurations

Note: A500 and A1500 now denote 2.0-based machines. A2500 only available in the US.

HARD DRIVES

Model	Supplier	Price	Machine	Capacity (Mb)	RAM Expansion	Rating	Issue
RocHard	Zye Technology	£379	A500	52	8 Mb	****	13
Impact II+	Silica	£399	A500	50/110	8 Mb	*****	1,2,8,13
A590	Commodore	£399	A500	20	2 Mb	***	1,2,8,13
DataFlyer500	Trilogic	£350	A500	48	-	**	1,2,8,13
500XP	Surface UK	£489	A500	40	2/8 Mb	****	1,2,8,13
FastTrak	Third Coast	£599	A500	40	-	***	8
Novia 30i	Power Computing	£399	A500	20/30	-	***	8
Prima	Power Computing	£499	A500	50/100	-	****	8
Trumpcard	Third Coast	£399	A500	40	-	***	8
Protar HD	Protar	£299	A500	20	8 Mb	****	-
Impact IIHC+8	Silica	£299	A1500→	40-300	8 Mb	****	1,2,13
DataFlyer2000	Trilogic	£350	A1500→	48	-	***	1,2
WordSync2000	Surface UK	£450	A1500→	52	-	****	1,13
A2091-40	Commodore	£200	A1500→	40	-	**	8,13
Nexus HC	Power Computing	£350	A1500→	40	8 Mb	****	8,13
SysQuest	Omega Projects	£690	SCSI	88	-	****	8
OpticalDrive	Power Computing	£1199	SCSI	128	-	****	-
TapeStreamer	Omega Projects	£600	SCSI	150	-	*****	-

Note: Trumpcard can be used on both A500 and A1500+

EXTERNAL DRIVES

Model	Supplier	Price	Machine	Size	Capacity	Disable Switch	Rating	Issue
PC880B	Power Computing	£55	Any	3 1/2"	880K	Yes	*****	8
RF332C	Silica Systems	£60	Any	3 1/2"	880K	Yes	****	0,1,2,8
RF542C	Silica Systems	£80	Any	5 1/4"	880K	Yes	****	0,1,2,8
A1011	Commodore	£100	Any	3 1/2"	880K	No	***	0,1,2,8
Zydec	Evesham Micros	£55	Any	3 1/2"	880K	Yes	***	8
CAX354	Cumana	£75	Any	3 1/2"	880K	Yes	****	0,1,2,8
3A-1D	Golden Image	£65	Any	3 1/2"	880K	Yes	****	0,8
AEHD	Applied Engineering	£140	Any	3 1/2"	1.52 Mb	No	*****	8
Internal2000	Power Computing	£50	A1500→	3 1/2"	880K	No	****	8
DualDrive	Power Computing	£120	Any	3 1/2"	2x880K	Yes	****	0,1,2,8
Floptical Disk	Digital Micronics	£650	Any	3 1/2"	20 Mb	Yes	*****	8

Note: PC880B comes with built-in disk copier. Floptical Disk not yet available in UK.

RAM EXPANSIONS

Model	Supplier	Price	Machine	Size	Max Size	Power Supply?	Fitting	Rating	Issue
500RX	Surface UK	£198	A500	2 Mb	8 Mb	Optional	Expansion Bus	*****	5
ProRAM Plus	Datel	£25	A500	512k	-	-	TrapDoor	***	8
RAM-Master 2	Datel	£100	A500	1.5 Mb	-	-	TrapDoor	***	-
V2000	Virgo	£104	A500	2 Mb	-	-	TrapDoor	*****	-
Zydec1.5	Zydec	£79	A500	1.5 Mb	-	-	TrapDoor	****	-
BaseBoard	EPD	£300	A500	4 Mb	-	-	TrapDoor	****	-
Ashcom512k	Ashcom	£35	A500	512k	-	-	TrapDoor	****	8
Ashcom1.8Mb	Ashcom	£155	A500	1.8 Mb	-	-	TrapDoor	****	-
Cortex2	Cortex	£199	A500	2 Mb	8 Mb	Yes	Expansion Bus	*****	8
GVP Series2	Silica	£159	A1500→	2 Mb	8 Mb	-	Card	*****	-
A2058	Commodore	£159	A1500→	2 Mb	8 Mb	-	Card	****	8
AdRAM2000	Power Computing	£179	A1500→	2 Mb	8 Mb	-	Card	****	8
Cortex2000	Cortex	£175	A1500→	2 Mb	8 Mb	-	Card	*****	8

PROCESSOR ACCELERATORS

Model	Supplier	Price	Machine	Processor	Speed	Max 32-bit RAM	Maths Co-pro	Rating	Issue
38 Special	Omega Projects	£850	Any	68030	38 MHz	8 Mb	68881	****	13
40/4 Magnum	Omega Projects	£NA	A1500→	68040	28 MHz	16 Mb	68882	*****	13
Zeus	Power Computing	£1449	A1500→	68040	28 MHz	64 Mb	68882	*****	14

PRODUCT LOCATOR

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040/500	Power Computing	£725	A500	68040	28 MHz	8 Mb	68882	*****	14
040/500i	Power Computing	£NA	A500	68040	28 MHz	16 Mb	-	****	14
Mercury	Power Computing	£1249	A3000	68040	28 MHz	32 Mb	68882	*****	14
G-Force	Silica	£599	A1500	68030	25 MHz	16 Mb	68881	****	15
Turbo68000	Bytes&Pieces	£45	A500	68000-16	16 MHz	-	No	**	-
AdSpeed	Silica	£173	A500	68000-16	16 MHz	-	No	****	3,5
VXL-30	ZCL Ltd	£409	A500	68030	25 MHz	8 Mb	Yes	****	-
2000/40	Marcam	£1937	A1500→	68040	50 MHz	32 Mb	Yes	*****	-
A3001	Silica	£1799	A1500→	68030	50 MHz	32 Mb	Yes	*****	3,5
G-Force	Silica	£1999	A3000	68040	28 MHz	-	-	*****	-
FusionForty	Power Computing	£1999	A1500→	68040	50 MHz	32 Mb	Yes	****	-
CSA MegaMidget	Bytes&Pieces	£389	A500	68030	33 MHz	8 Mb	Yes	****	3,5
A5000-16	Solid State	£295	A500	68020	16 MHz	4 Mb	Yes	*****	-
B5000-25	Solid State	£595	A500	68020	25 MHz	16 Mb	Yes	****	3,5
B5000-40	Solid State	£1162	A1500→	68030	40 MHz	32 Mb	Yes	*****	-
Harms Pro30	Bytes&Pieces	£1099	A1500→	68030	28 MHz	4 Mb	Yes	***	3,5
A2630	Commodore	£1200	A1500→	68030	25 MHz	4 Mb	Yes	****	-
CSA Rocket Launcher	Omega Products	£549	A1500	68030	50MHz	-	68882	*****	20
CBM 040 Card	Commodore	£NA	A3000	68040	40MHz	NA	Yes	*****	20
A530	GVP/Silica	£800	A500	68030	40MHz	8 Mb	68882	*****	20

Note: Although some 68030 cards appear to run faster than their '040 equivalents, this may not necessarily be the case. All '040 cards will run faster internally.

SCANNERS

Model	Supplier	Price	Machine	Type	Colour	Resolution	Rating	Issue
GT-6000	Epson UK	£1300	Any	Flatbed	Yes	600dpi	*****	17
DaataScan 2GS	Pandaal	£125	Any	Hand Held	No	400dpi	***	14
Power Scanner 2	Power Computing	£99	Any	Hand Held	No	400dpi	*****	14
AlfaScan	Golden Image	£199	Any	Hand Held	No	400dpi	*****	14
Handy Scanner	Pandaal	£140	Any	Hand Held	No	400dpi	***	14
Sharp JX-100	Silica	£695	Any	Hand Held	Yes	200dpi	*****	-
GeniScan	Datel	£130	Any	Hand Held	No	400dpi	***	-
GoldenImage	GoldenImage	£150	Any	Hand Held	No	400dpi	*****	5
Sharp JX-300	Silica	£3600	Any	FlatBed	Yes	300dpi	*****	-
Pandaal Scanner	Pandaal	£180	Any	Hand Held	No	400dpi	****	3
PowerScanner	Power Computing	£99	Any	Hand Held	No	400dpi	***	11

DIGITISERS

Model	Supplier	Price	Realtime	Colour	Realtime Colour	Animation	Rating	Issue
DigiTiger II	SA&H	£200	No	Yes	No	No	****	17
V-Lab	ACS	£300	Yes	Yes	Yes	No	****	17
DigiView 4	Silica	£150	No	Yes	No	No	****	-
ColourPic	JCL	£399	Yes	Yes	Yes	No	****	2
VIDIAmiga	Rombo	£130	Yes	Yes	No	Yes	****	5
Videon	Power Computing	£200	No	Yes	No	No	***	-
FrameGrabber	Marcam	£599	Yes	Yes	Yes	Yes	*****	-
VideoDigitiser	Datel	£80	Yes	Yes	No	No	****	-

SOUND SAMPLERS

Model	Supplier	Price	Stereo	Volume Adjust	Resolution	Rating	Issue
StereoMaster	MicroDeal	£40	Yes	Yes	8-bit	****	11
TechnoSound	New Dimensions	£35	Yes	No	8-bit	****	5
Audio Engineer	HB Marketing	£199	Yes	Yes	8-bit	*****	5
Perfect Sound 3	HB Marketing	£60	Yes	Yes	8-bit	***	10
SampleStudio 2	Datel	£70	Yes	No	8-bit	**	-
Sound Master	HB Marketing	£130	Yes	Yes	8-bit	*****	-
MicroSampler	Datel	£25	Yes	No	8-bit	*	-
SoundTrap 3	Omega Projects	£30	No	No	8-bit	****	3
AMAS 2	MicroDeal	£100	Yes	Yes	8-bit	****	-
StereoSampler2	Trilogic	£40	Yes	Yes	8-bit	****	-
GVP DSS	Silica	£60	Yes	Yes	8-bit	****	3
AD1012	HB Marketing	£TBA	Yes	Yes	12-bit	*****	-
AD1016	HB Marketing	£TBA	Yes	Yes	16-bit	*****	-
Audition 4	HB Marketing	£49	Yes	Yes	8-bit	****	10
Audio Sculpture	SMG	£49	Yes	Yes	8-bit	**	12

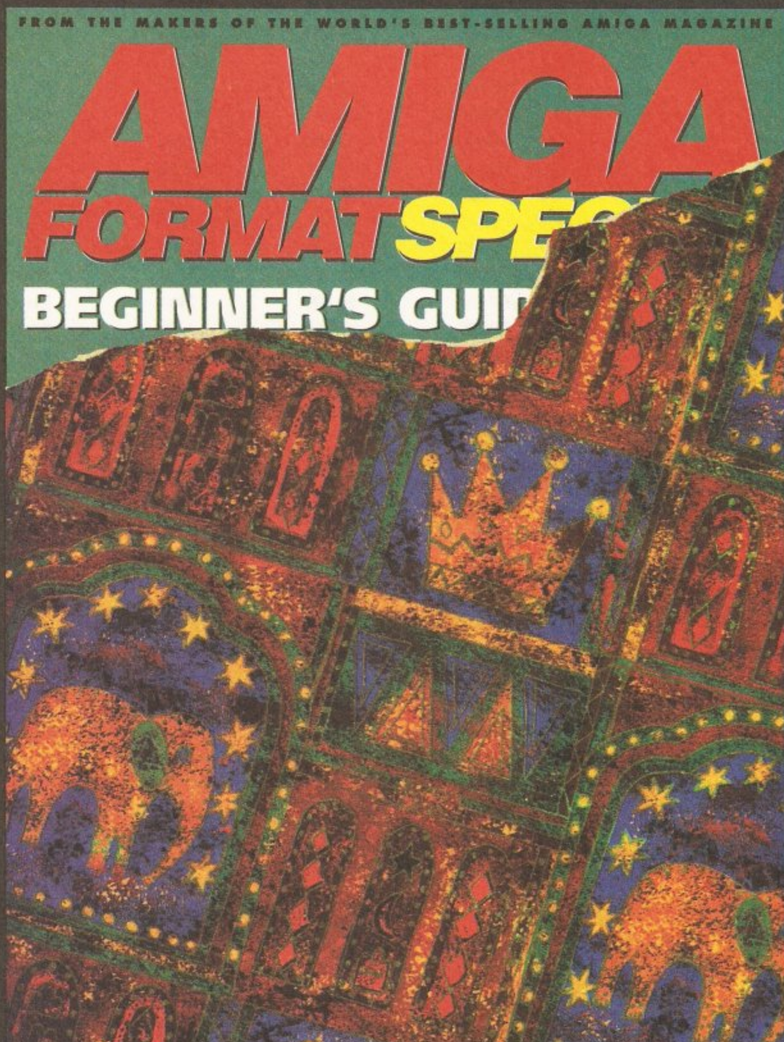
NOTE: AD1012 and AD1016 are for A1500→ only

GENLOCKS

Model	Supplier	Price	Fade	Dissolve	S-VHS	RGB Pass thru	Rating	Issue
Hama 290	Hama PVAC	£749	Yes	Yes	Yes	Yes	****	16
MicroGen	Power Computing	£199	Yes	Yes	No	Yes	****	-
MiniGen	ASAP	£99	No	No	No	No	**	-
RocGen	Silica	£117	Yes	Yes	No	No	****	8
RocGen+	Silica	£199	Yes	Yes	No	Yes	****	10

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PRODUCT LOCATOR

A8802	**Marcam**	**£139**	**No**	**No**	**No**	**Yes**	***	-
8802 FMC	Marcam	£178	Yes	No	No	Yes	***	-
A8802S-VHS	**Marcam**	**£499**	**Yes**	**Yes**	**Yes**	**Yes**	***	**10**
A8806	Marcam	£499	No	No	No	Yes	*****	-
GST Gold	**Third Coast**	**£550**	**Yes**	**Yes**	**Yes**	**Yes**	****	-
VideoCentre2	G2	£1170	Yes	Yes	Yes	Yes	****	-
VideoCentre3	**G2**	**£1999**	**Yes**	**Yes**	**Yes**	**Yes**	****	**7**
VideoMaster VM-2	Power Computing	£799	Yes	Yes	Yes	Yes	***	1
Videocomp G-100	**Silica**	**£1800**	**Yes**	**Yes**	**Yes**	**Yes**	*****	**3**
ImageMaster	Neriki	£1150	Yes	Yes	Yes	Yes	***	-
ProGen	**Gordon Harwood**	**£130**	**No**	**No**	**No**	**Yes**	***	-

COLOUR CARDS

Model	Supplier	Machine	Price	Type	Colour Palette	Max Resolution	Rating	Issue
Rembrandt	Power Computing	A1500→	£1499	24-bit	24-bit	1024x1024	****	13
AVideo 12	**Checkmate**	**A1500→**	**£299**	**12-bit**	**12-bit**	**768x580**	***	**13**
AVideo 24	Checkmate	A1500→	£599	24-bit	24-bit	768x580	****	15
HAM-E	**Checkmate**	**A500**	**£299**	**Pseudo**	**24-bit**	**368x580**	*****	**8**
DCTV	Silica	A500	£499	Pseudo	24-bit	368x580	****	12
GVP IV-24	**Silica**	**A1500→**	**£1799**	**24-bit**	**24-bit**	**910x576**	****	**12**
Harlequin	ACS	A1500→	£1400	24-bit	24-bit	910x576	*****	11
OpalVision	**Micro-PACE**	**£899**	**24-bit**	**24-bit**	**768x580**		*****	**20**

Note: A500 devices can be used on all Amigas

TOUCH TABLETS

Model	Supplier	Price	Size	Resolution	Rating	Issue
Podstat PT-3030	HB Marketing	£179	9x12"	*****	*****	-
Genitizer	**Datel**	**£130**	**9x6"**	****	****	-
Cherry Mk4	Cherry	£450	9x12"	*****	***	-

DOT-MATRIX PRINTERS

Model	Supplier	Price	Pins	Speed(CPS)	Fonts	Buffer	Rating	Issue
200	Citizen	£250	24	240	7	8K	****	-
240C	**Citizen**	**£350**	**24 (colour)**	**240**	**9**	**8K**	*****	-
P20	NEC	£351	24	115	8	8K	****	4
L24d	**Citizen**	**£292**	**24**	**109**	**3**	**8K**	****	**4**
Swift 9	Citizen	£280	9	121	3	8K	*****	4
Swift 24	**Citizen**	**£428**	**24**	**121**	**5**	**8K**	****	**4**
LX850	Epson	£269	9/24	106	3	4K	***	4
LQ400	**Epson**	**£269**	**24**	**121**	**3**	**8K**	****	**4**
LQ550	Epson	£375	9	109	4	8K	***	4
LC200	**Star**	**£304**	**24**	**91**	**4**	**16K**	****	**4**
LC24	Star	£304	24	130	5	16K	****	4
ML380	**Oki**	**£386**	**24**	**127**	**3**	**8K**	****	**4**

MISCELLANEOUS HARDWARE

Model	Supplier	Price	Type	Rating	Issue
ICD KickBack	Silica Systems	£27	Keyboard switchable ROM sharer	*****	-
RocKey	**Silica Systems**	**£350**	**Chromakey for RocGen Plus genlock**	**N/A**	-
Golden Gate	Silica Systems	£N/A	25MHz 80386 PC Emulator for Amiga 1500+	****	-
I/O Port	**SwitchSoft**	**£28**	**Electronics Projects kit**	****	**17**
Sound Enhancer	Omega Projects	£40	Improved Amiga sound capabilities	*****	-
Kickswitch	**Omega Projects**	**£25**	**Keyboard switchable ROM sharer**	*****	-

If your company has a product which you think deserves to appear in the *Amiga Shopper Product Locator*, please write to us at the usual editorial address with full details.

• SUPPLIER LIST • SUPPLIER LIST • SUPPLIER LIST •

Supplier	Telephone
ACS	031 557 4242
App. Engineering	0101 214 241 6060
ASAP	0724280222
Ashcom	0530 411485
Bytes & Pieces	0253 734218
Checkmate Digital Ltd	071 923 0658
Citizen	0895 72621
Commodore	0628 770088
Cortex	051 236 0480
Cumana	0483 503121
Datel Electronics	0782 744707
Digital Micronics	0101 619 431 8301
EPD	0602 841640
Epson UK	0442 61144
Evesham Micros	0386 765500
G2 Video Systems	0252 737151
Gasteiner	081 365 1151
Golden Image	081 518 7373
Gordon Harwood	0773 836781
HB Marketing	0753 686000
JCL Business Systems	0892 518181
Marcam Ltd	0604 790466
MicroDeal	0726 68020
Naksha UK	0925 56398
NEC	081 993 9831
Neriki	081 900 1866
New Dimensions	0291 690933
Oki	0753 31292
Omega Projects	0702 466933
Pandaal Marketing	0234 855666
Power Computing	0234 273000
Protar	0923 54133
Rombo	0506 414631
SA & H	010 40 0511 551701
Silica Systems	081 309 1111
SMG	0274 562999
Solid State Leisure	0933 650677
Star	0494 471111
Surface UK	081 566 6677
Switchsoft	0325 464423
Third Coast Technologies	0257472444
Trilogic	0274 678062
Virgo	0276 676308
WTS Electronics	0582 491949
ZCL Ltd	0543 251275

BUYING ADVICE FOR SHOPPERS

Whether buying over the phone or at a local store, here's our advice on how to get what you want

BUYING IN PERSON

- Where possible, always test any software and hardware in the shop before taking it home, to make sure that it works properly.
- Make sure you have all the necessary leads, manuals or other accessories you need.
- Don't forget to keep your receipt.

BUYING BY PHONE

- Be as clear as possible when stating what you want to buy. Make sure you confirm all the technical details of what you are buying. Some things to bear in mind are version numbers, memory requirements, other required hardware or software and compatibility with your particular model of Amiga (that is, make sure you know which version of Kickstart you have).
- Check the price you are asked to pay, and make sure that it's the same as the price advertised.
- Check that what you are ordering is actually in stock.
- Check when and how the article will be delivered, and that any extra charges are as stated on the advert.
- Make a note of the date and time when you order the product.

BUYING BY POST

As with buying by phone, you should clearly state exactly what it is you are buying, at what price (refer to the magazine, page and issue number where it's advertised) and give any relevant information about your system set-up where necessary. You should also make sure you keep copies of all correspondence both to and from the company concerned.

MAKING RETURNS

Whichever method you buy by, you are entitled to return a product if it fails to meet any one of the following three criteria:

- The goods must be of 'merchantable quality'.
- The goods must be 'as described'.
- The goods must be fit for the purpose for which they were sold.

If they fail to satisfy any or all of the criteria, then you are then entitled to:

- Return them for a refund.
- Receive compensation for part of the value.
- Get a replacement or free repair.

When returning anything, ensure that you have proof of purchase and that you return the item as soon as possible after receiving it. For this reason it is important that you check the hardware or software as soon as it is delivered to make sure everything you ordered is there and works as it is supposed to.

HOW TO PAY

Paying by credit card is the most sensible way, whether buying in person, by post or on the phone, because you may be able to claim the money from the credit card company even if the firm you ordered from has gone bust or refuses to help sort out your problem.

Otherwise, you should pay by crossed cheque or postal order – never send coins or notes through the mail.

GETTING REPAIRS

Always check the conditions of the guarantee, and servicing and replacement policy, so that you know what level of support to expect. Always fill in and return warranty cards as soon as possible, and make sure that you are aware of all the conditions contained in the guarantee.

BUYING PD

Even though PD software is relatively inexpensive, you should still apply the guidelines set out above, making sure that you confirm all orders as clearly as possible.

Shopping around is still important when buying PD because different houses charge different prices for the same disks. There is no set pricing structure for disks, but bear in mind that PD houses are, in theory, supposed to be non-profit making operations. AS

A CHECK LIST FOR MAIL ORDER BUYING

1 **Make sure you know exactly what you want. Draw up a checklist of the specifications you are looking for and what you want it to be able to do. Check with the suppliers that their product matches your list.**

2 **Will the product you have in mind work with your existing set-up, and anything else you are planning to buy?**

3 **Can you see a demonstration? Many products are on display at computer shows around the country.**

4 **Are there any hidden extras? Does it need 1Mb to run, or a hard disk?**

5 **What technical support is provided by the supplier? Does the manufacturer offer after-sales advice? Check before you buy.**

6 **Check the guarantee terms. How long is the free warranty? What does it offer?**

7 **Draw up a list of these details and make them a condition of your order.**

8 **Check the price and delivery details when you order, and make a note of them.**

9 **Note down when you placed the order and who you spoke to.**

10 **When it arrives, check everything carefully. If anything is missing, don't use the product at all – contact the supplier. If it doesn't work, make the obvious checks such as the fuse. If it still doesn't work don't try to fix it – contact the supplier.**

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29 Monmouth Street
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The closing date is February 8. Send only one entry per household. AS



The SupraFaxModem V32bis is, quite simply, one of the fastest modems around. And what's more, it handles faxes as well

THE CHALLENGE • THE CHALLENGE

1. From which word or phrase is the more common short-hand term 'fax' derived?
- **a) Fast Access Xerox**
- **b) Facts And eXtras**
- **c) Facsimile**

2. Who was it who almost said 'Faxes do not cease to exist because they are ignored'?
- **a) Aldous Huxley**
- **b) Francis Bacon**
- **c) Margaret Thatcher**

3. What is the word 'modem' short for?
- **a) Multiplexed demography**
- **b) Modulator/de-modulator**
- **c) Neither of the above**

THE CHAMPIONS!

The ten winners of the *Poetry In Motion* competition are: TL Foley of Lambeth, GH Moss of Oldham, Michael Stonefold of Berwickshire, M Harker of Cleveland, JF Kenny of Kent, Stephen Lynch of Derry, I Timson of Blackburn, Lisa Darby of Worcester, Mrs T Fiorentini of Derry and TD Nicholson of Bolton. The five runners-up are: Trevor Wright of Melton Mowbray, KN Tailor of Edmonton, Paul Stevenson of Aberdeenshire, Phil Stubs of Buxton and Alex Taylor of Leeds. The two winners of *I'm In a Whirl*, who'll both be receiving a CD-ROM drive, are: GM Holmes of Peterborough and Alison Bullock of Nottingham. Congrats to you all!

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• NOTE TO NEWSAGENT: *Amiga Shopper* is published by Future Publishing (0225 442244) and is available from your local wholesaler.

• PS Oh, yes and if you do have any problems getting hold of your favourite Amiga mag, call Kate Elston on 0225 442244 and she'll help you out.

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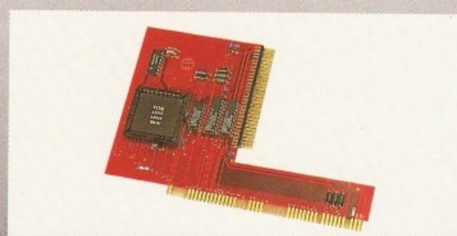
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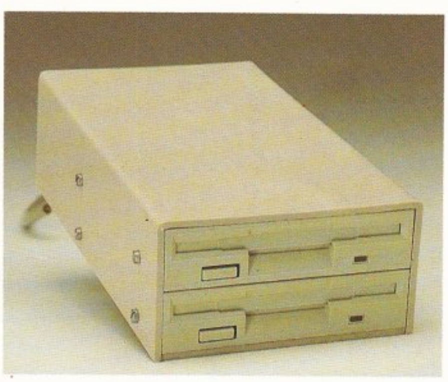
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